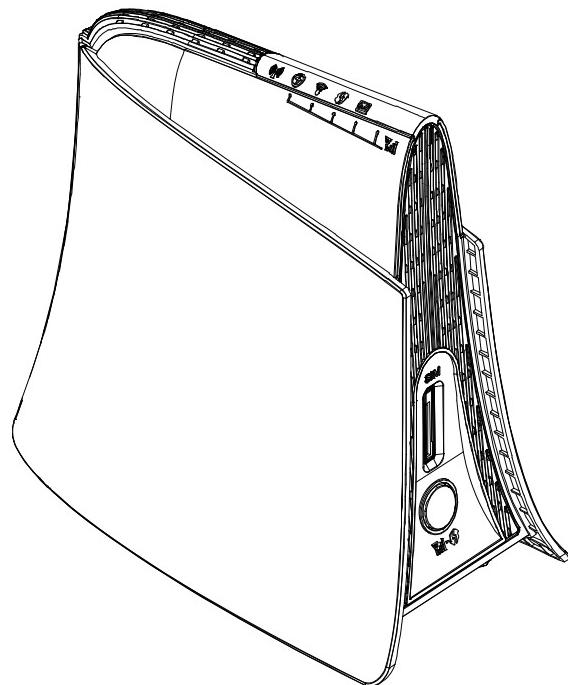


# User Manual

## **BandLuxe** **R550 Series** **LTE/HSPA+ Wi-Fi Router**



**BandLuxe™**





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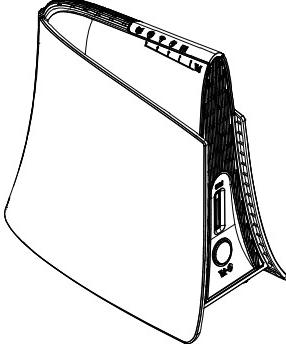
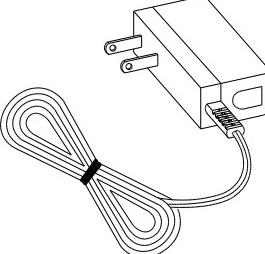
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# Package Contents

Thank you for your purchase of this LTE/HSPA+ WiFi Router. This product is designed to access the Internet via 4G technology and share the bandwidth through a Wi-Fi network. It is easy to configure and operate even for non-technical users. This manual contains instructions for installing and configuring the product. Read the manual carefully before you use the product, so that you can fully exploit the product functions.

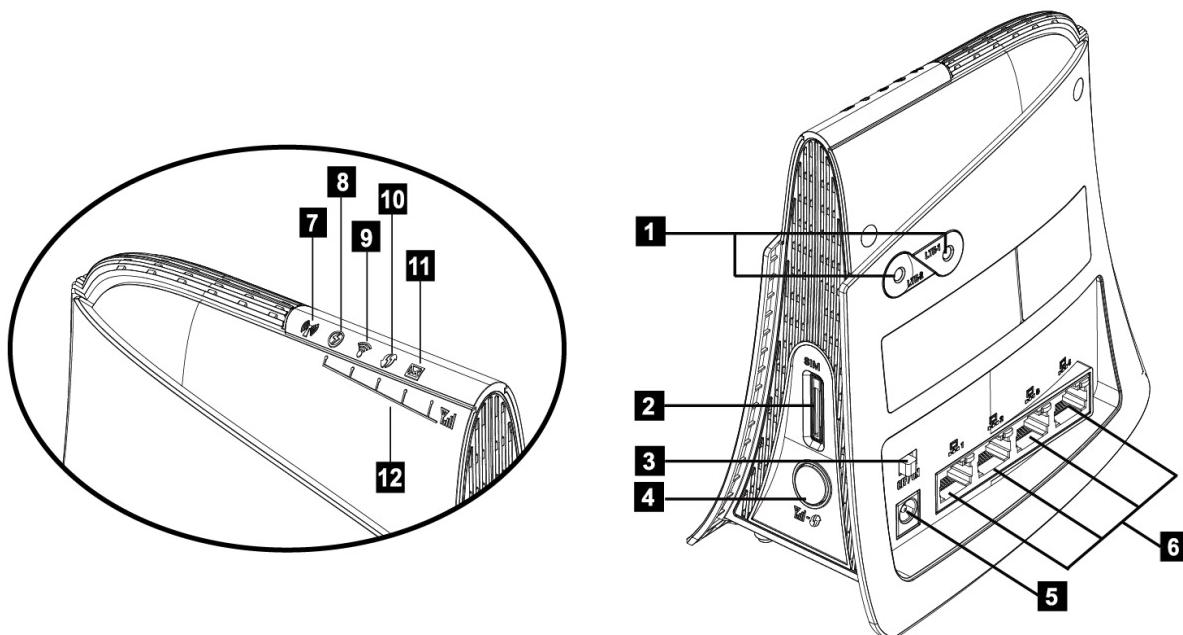
## Package Contents

	
<i>R550 series LTE Home Router</i>	<i>Power Adapter</i>

## Features

- R550 series LTE Home Router
- Wi-Fi Protected Setup (WPS) Support
- Uplink up to 50 Mbps
- Downlink up to 100Mbps
- Supports Wi-Fi 802.11 b/g/n
- Supports LAN Ethernet Ports
- Dual embedded cellular antenna (for diversity)

# Hardware Overview



- 1 4G External Antenna Ports** Connect 4G External Antennas if needed.
- 2 SIM Card Slot** Insert SIM/USIM. Push-push type.
- 3 Power Switch** Switch on/off the router.
- 4 Signal Strength LED/WPS/Reset button**  
Short press (1 second): Enable signal strength indication.  
Press for 3 seconds (< 10 seconds): Active WPS.  
Long press (>10 seconds): Restore to factory default settings.
- 5 Power Receptor** Receptor for the Power Adapter.
- 6 LAN Port** Connect a LAN device as needed.
- 7 Network Status LED**  
● (Blue) 4G LTE  
● (Green) 3G HSPA+/HSPA/UMTS/EVDO  
● (Pink/Purple) 2G EDGE/GPRS/GSM  
● (Red) No signal, SIM error, Service failure (no IP) ; Flashing when firmware is being updated

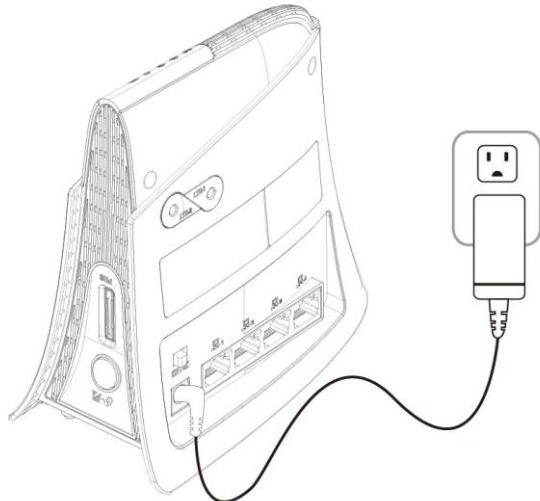
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<b>8</b>	<b>Power LED</b>	Solid when power is on / Signal Strength LED
<b>9</b>	<b>WiFi LED</b>	Solid when WiFi is on; Flashing during WiFi data transmission / Signal Strength LED
<b>10</b>	<b>WPS LED</b>	Flashing when WPS is in use /Signal Strength LED
<b>11</b>	<b>SMS LED</b>	Flashing when there is unread SMS / Signal Strength LED
<b>12</b>	<b>Signal Strength Bars Reading</b>	Short press on Signal LED/WPS/Reset button, Signal Strength LEDs show current signal strength. Strong signal:  Poor signal: 

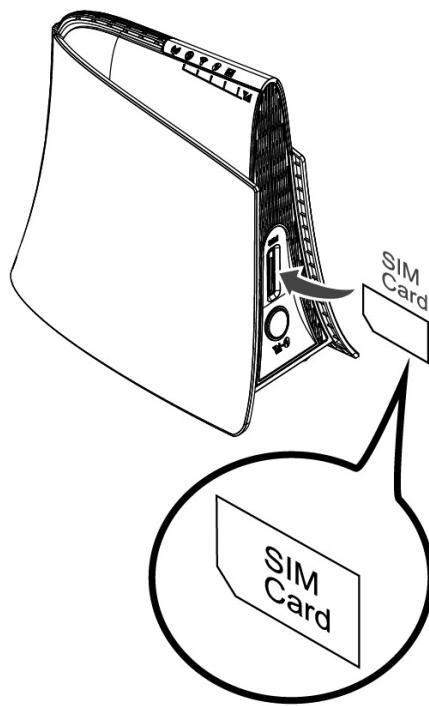
\*To send and receive SMS may incur additional fees.  
Contact your carrier for information about service availability and plans.

# Installation

1. Connect the power Adapter to the Router(**6**) and connect it to an outlet.



2. Insert your SIM card into the slot on the Router, making sure the SIM card orientation matches the SIM card slot, as shown in the picture.



3. Slide the power switch (**3**) to ON.
4. One of the following two methods can be chosen to link your PC with the Router.

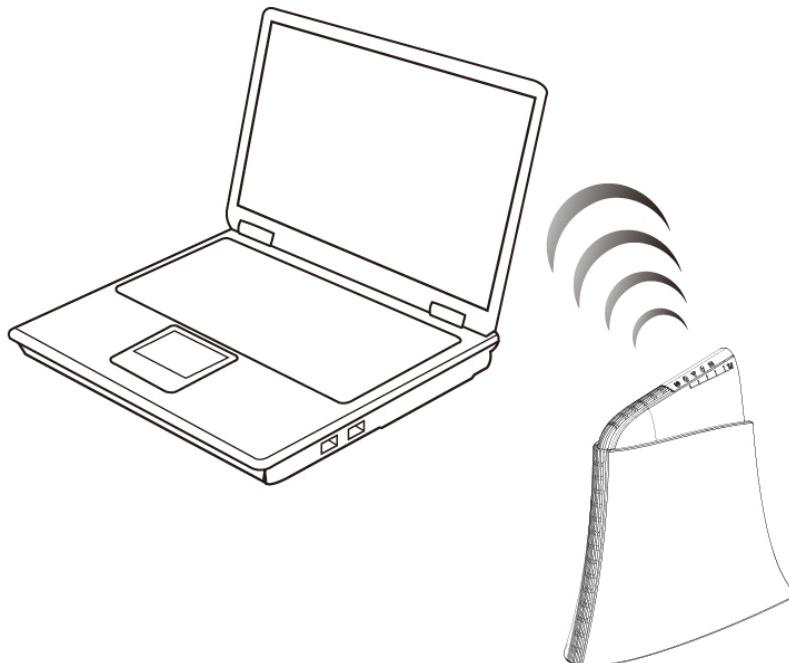
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### **A. Wireless Connection (for Windows)**

To connect your PC to the Router via WiFi, in Microsoft Windows, go to Control Panel > Network Connections. Right click on **Wireless Network Connection** and choose **View Available Wireless Networks**. Select default SSID [**BR\_LTE\_xxxx**] and enter default password (WPA key, refer to label on the Router's backside). Click **Connect**. The “xxxx” corresponds with the last 4 digits of MAC address.

### **Wireless Connection (for Mac)**

To click the  on the upper side of the screen to view available wireless networks.

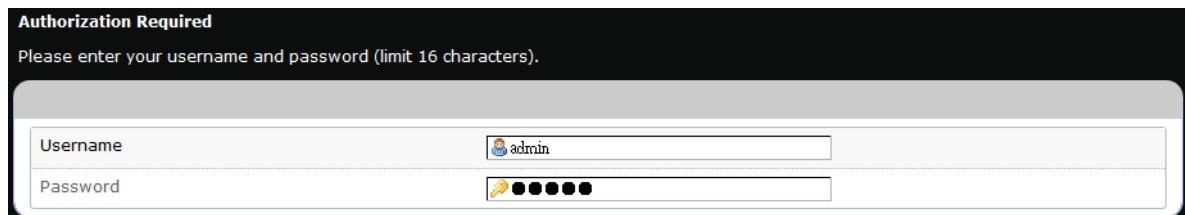


### **B. Wired Connection**

To connect your PC to the Router via an Ethernet cable, connect one end of the cable to one of the four LAN ports on the Router, and another end of the cable to an Ethernet port on your computer.

- 
5. The router uses a web-based configuration utility. To access the configuration utility, open a browser (ex: Mozilla, Firefox, etc.) and enter the IP address (**http://192.168.1.1**) for the Router in your browser's address bar.

Enter the router Username (**admin**) and Password (**admin**), and then click

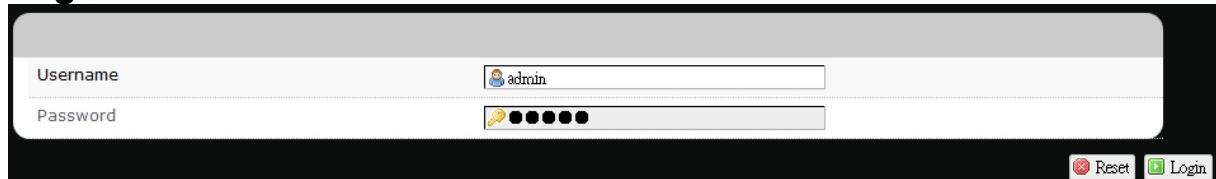


A screenshot of a web-based login interface. At the top, a dark header bar contains the text "Authorization Required" and "Please enter your username and password (limit 16 characters)". Below this is a light gray form area with two input fields. The first field is labeled "Username" and contains the value "admin". The second field is labeled "Password" and contains the value "admin" represented by a series of black dots. A "Login" button is located at the bottom left of the form area.

# Using Web-based Management

This chapter will guide you on how to configure your router via the web-based utility.

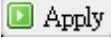
## Login

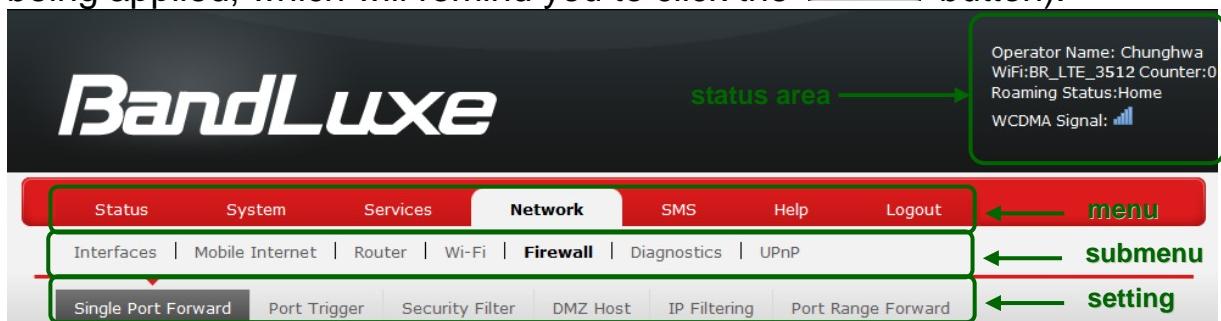


The screenshot shows a login interface with two input fields: 'Username' containing 'admin' and 'Password' containing 'admin'. Below the fields are 'Reset' and 'Login' buttons.

1. Launch a web browser (e.g Mozilla Firefox).
2. In the address bar, enter <http://192.168.1.1>, then press **Enter**.



3. On the opening screen, enter the username (**admin**) and password (**admin**).
4. Click **Login**.
5. Click one of the *menu*, *submenu*, and/or *setting* tabs to configure the system. Additionally, the *status area* displays current wireless network information and setting-related messages (e.g. the message **Unapplied Change** appears whenever new settings are temporarily stored in the router without being applied, which will remind you to click the  button).



**Note:** If SIM Card's PIN verification is needed, select **Network > Mobile Internet > U/SIM PIN Management**. Enter the PIN code into text box of "**PIN Code Verification**". Click **Verify**. Mobile internet access will be enabled shortly after.

# Status

This menu displays various status of the router. The associated submenu items are: **Overview**, **System Log**, **VnStat Traffic Monitor**, and **Mobile Internet**.

## Overview

The screenshot shows the Router Status Overview page with the following sections:

- System**: Displays basic information like Router Model Name (R552), Router Firmware Version (AR\_0\_0000000\_0\_001\_0042), Modem Firmware Version (QC\_2\_00016739\_1\_001\_0017), ICCID (89886920032024020634), IMEI (359061050001949), and Local Time (Mon Dec 30 03:25:10 2013).
- Network**: Shows IPv4 WAN Status with Type: dhcp, Address: 100.72.106.108, Netmask: 255.255.255.252, Gateway: 100.72.106.109, DNS 1: 168.95.192.1, DNS 2: 168.95.1.1, and Connected: 0h 23m 3s. IPv6 WAN Status is listed as Not connected.
- DHCP Leases**: A table with columns Hostname, IPv4-Address, MAC-Address, and Leasetime remaining. One entry is shown: User-NB2, 192.168.1.194, 20:89:84:85:1A:56, and 11h 34m 7s.
- Local Network**: A table with columns Local MAC Address, Router IP Address, Subnet Mask, DHCP Server, DHCP Server Change, Start IP Address, and IP Address Range. One entry is shown: 00:26:FA:0B:35:12, 192.168.1.1, 255.255.255.0, Enable, DHCP Server Change, 192.168.1.100, and 192.168.1.249.
- Wireless**: Details for Generic 802.11bgn Wireless Controller (wifi0). SSID: BR\_LTE\_3512, Channel: 9 (2.452 GHz), Mac address: 00:26:FA:0B:35:12, and Encryption: mixed WPA/WPA2 PSK (CCMP).
- Associated Stations**: A table with columns MAC-Address and Network. It states "No information available".

The **Overview** submenu renders complete statistics for the router.

## System

Displays system information: router model name, router firmware version,

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modem firmware version, phone number (MDN), ICCID, MIN (MSID), PRL version, IMEI, MEID, and local time.

## Network

Displays current network connection information of IPv4 WAN and/or IPv6 WAN: type of network assignment (e.g. DHCP), network address, netmask, gateway, DNS addresses 1 & 2, and time connected since the establishment of the current mobile internet connection.

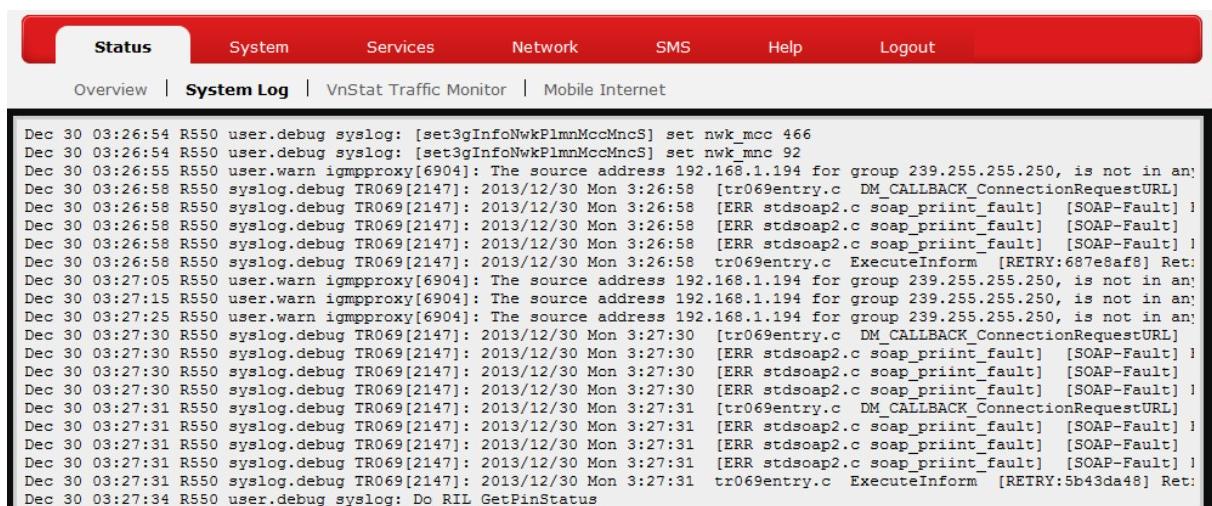
## DHCP Leases

Display DHCP lease information for each client: hostname, IPv4 address, MAC address, and lease time remaining.

## Local Network

Displays local network information: local MAC address, router IP address, subnet mask, DHCP server, DHCP server change, start IP address, IP and address range

## System Log



The screenshot shows a web-based interface for managing a device. At the top, there is a red navigation bar with tabs for Status, System, Services, Network, SMS, Help, and Logout. Below the navigation bar, there is a secondary horizontal menu with links for Overview, System Log (which is currently selected and highlighted in blue), VnStat Traffic Monitor, and Mobile Internet. The main content area is a large text box displaying a log of system events. The log entries are as follows:

```
Dec 30 03:26:54 R550 user.debug syslog: [set3gInfoNwkPlmnMccMncS] set nwk_mcc 466
Dec 30 03:26:54 R550 user.debug syslog: [set3gInfoNwkPlmnMccMncS] set nwk_mnc 92
Dec 30 03:26:55 R550 user.warn igmpproxy[6904]: The source address 192.168.1.194 for group 239.255.255.250, is not in an
Dec 30 03:26:58 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:26:58 [tr069entry.c DM_CALLBACK_ConnectionRequestURL]
Dec 30 03:26:58 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:26:58 [ERR stdsoap2.c soap_print_fault] [SOAP-Fault] !
Dec 30 03:26:58 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:26:58 [ERR stdsoap2.c soap_print_fault] [SOAP-Fault]
Dec 30 03:26:58 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:26:58 [ERR stdsoap2.c soap_print_fault] [SOAP-Fault]
Dec 30 03:26:58 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:26:58 tr069entry.c ExecuteInform [RETRY:687e8af8] Ret:
Dec 30 03:27:05 R550 user.warn igmpproxy[6904]: The source address 192.168.1.194 for group 239.255.255.250, is not in an
Dec 30 03:27:15 R550 user.warn igmpproxy[6904]: The source address 192.168.1.194 for group 239.255.255.250, is not in an
Dec 30 03:27:25 R550 user.warn igmpproxy[6904]: The source address 192.168.1.194 for group 239.255.255.250, is not in an
Dec 30 03:27:30 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:27:30 [tr069entry.c DM_CALLBACK_ConnectionRequestURL]
Dec 30 03:27:30 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:27:30 [ERR stdsoap2.c soap_print_fault] [SOAP-Fault] !
Dec 30 03:27:30 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:27:30 [ERR stdsoap2.c soap_print_fault] [SOAP-Fault]
Dec 30 03:27:30 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:27:30 [ERR stdsoap2.c soap_print_fault] [SOAP-Fault] !
Dec 30 03:27:31 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:27:31 [tr069entry.c DM_CALLBACK_ConnectionRequestURL]
Dec 30 03:27:31 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:27:31 [ERR stdsoap2.c soap_print_fault] [SOAP-Fault] !
Dec 30 03:27:31 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:27:31 [ERR stdsoap2.c soap_print_fault] [SOAP-Fault]
Dec 30 03:27:31 R550 syslog.debug TR069[2147]: 2013/12/30 Mon 3:27:31 tr069entry.c ExecuteInform [RETRY:5b43da48] Ret:
Dec 30 03:27:34 R550 user.debug syslog: Do RIL_GetPinStatus
```

The **System Log** submenu tracks system activities after power on.

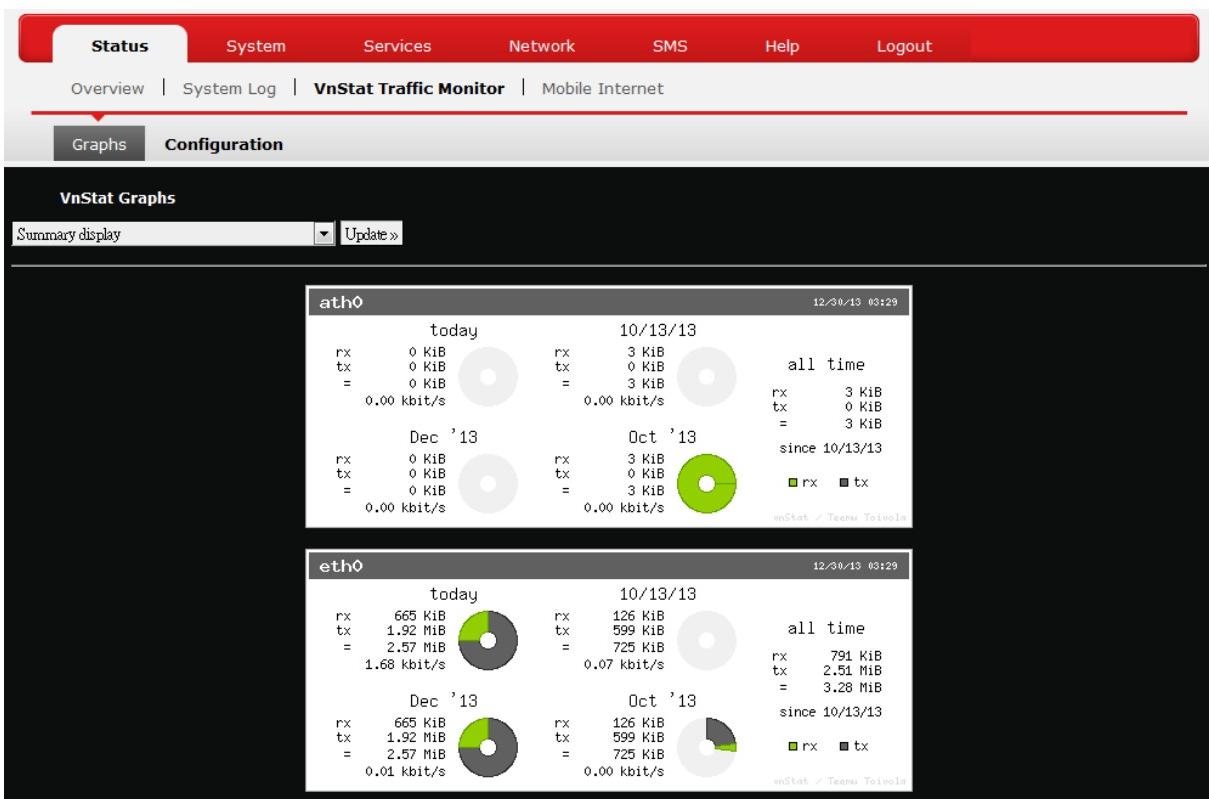
# VnStat Traffic Monitor

The screenshot shows the VnStat Traffic Monitor interface. At the top, there's a red header bar with tabs for Status, System, Services, Network, SMS, Help, and Logout. Below the header, a navigation bar includes Overview, System Log, VnStat Traffic Monitor (which is active), and Mobile Internet. A secondary navigation bar at the bottom has Graphs (active) and Configuration tabs.

## Graphs

Displays VnStat network traffic history in various graphic analysis options: Summary display, Top 10 display, Hourly traffic, Daily traffic, and Monthly traffic.

Click **▼** to select an analysis option from the drop-down list, and click **Update**. The VnStat Graphs will be updated accordingly.



## Configuration

This screenshot shows the VnStat Configuration page. It includes a section for "Monitor selected interfaces" where the "Ethernet Adapter: \"usb0\" (wan)" checkbox is checked. There is also a "Rest Traffic Flow" checkbox. At the bottom right, there are three buttons: Reset, Save, and Apply.

**VnStat Traffic Monitor** configurations can be made here.

- a) *Monitor selected devices:* Click the checkbox to enable/disable network monitoring of the displayed interface(s). Click the link [wan](#) to jump to the **Common Configuration** setting under the submenu **Network ➔ Interfaces**.
- b) *Rest Traffic Flow:* Click to discard previous network history log and start anew.

## Mobile Internet

The screenshot shows a web-based interface with a red header bar containing navigation links: Status, System, Services, Network, SMS, Help, and Logout. Below the header, a breadcrumb trail indicates the current location: Overview | System Log | VnStat Traffic Monitor | Mobile Internet. The main content area is divided into four sections: Signal Quality, U/SIM Status, Register Network, and Internet Connection. Each section contains a table with configuration details.

Signal Quality	
Rx Signal Strength(dBm)	-61

U/SIM Status	
SIM Status	PIN Enable(Verified)

Register Network	
Network Name	Chunghwa
Network Technology	WCDMA
Home/Roaming	Home

Internet Connection	
Connection Type	Service Available
Internet IP Address	100.90.146.212
Gateway	100.90.146.213
DNS 1	168.95.192.1
DNS 2	168.95.1.1

The **Mobile Internet** submenu displays mobile internet statistics.

### Signal Quality

Displays signal strength of current mobile internet connection in dBm.

### U/SIM Status

Displays current SIM card status:

- a) *Read SIM Fail* – No valid SIM card is inserted
- b) *PIN Disable(Verified)* – PIN protection is disabled while the SIM card status is verified; mobile internet service is available with this status.
- c) *PIN Enable(No Verified/Retries:#)* – PIN protection is enabled while the SIM card verification is pending (whereas # is the number of allowed PIN verifications remaining before SIM lock occurs).

---

d) *PIN Enable(Verified)* – PIN protection is enabled while the SIM card status is verified; mobile internet service is available with this status.

## **Registered Network**

a) *Network Name* – name of your mobile internet service provider

b) *Network Technology* – mobile internet communication signal type.

Ex: WCDMA (3G) and LTE (4G).

c) *Home/Roaming* – displays current network roaming status:

Home indicates mobile internet connection to the home location where the SIM card service is registered. Roaming indicates the extended mobile internet connection service in a location different from the home location where the SIM card service is registered. An example of roaming is when you travel abroad.

## **Internet Connection**

Displays information of current internet connection:

*Connection Type, Internet IP Address, Gateway, and DNS 1/2.*

# System

This menu is for system information and configurations.

## System

The screenshot shows the 'System' configuration page with the following sections:

- General Settings:** Local Time (Mon Dec 30 03:42:41 2013), Hostname (R650), Time Zone (UTC).
- Time Synchronization:** Enable NTP client (checked), NTP server candidates 1 (watch.stdtime.gov.tw), NTP server candidates 2 (empty).
- Remote System Log:** Router LAN client IP Address (empty), Server port (514).

At the bottom right are buttons for Reset, Save, and Apply.

### System Properties

Click either the “General Settings” or “Language and Style” tab to configure their respective settings.

#### General Settings

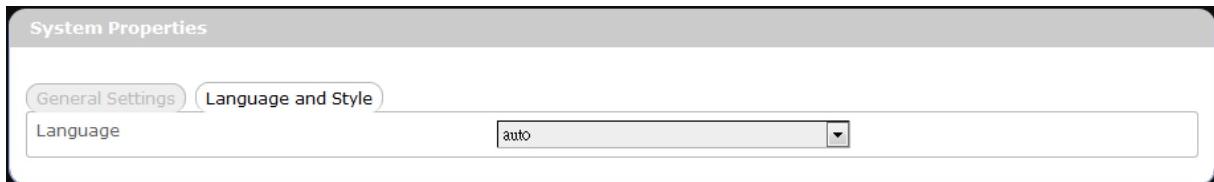
**Local Time** – Displays current local time. To synchronize local time with the browser, click  Sync with browser.

**Hostname** – Enter the desired hostname in this check field.

**Time Zone** – Sets the time zone associated with this router. Click on  and select the desired region.

---

## **Language and Style**



**Language** – Sets the desired display language and style of the router. Click  and select the desired display language and style.

## **Time Synchronization**

*Enable NTP client:* Click the checkbox to enable/disable. With this option enabled, two more options will appear– “Provide NTP server” and “NTP server candidates”.

*NTP server candidates 1/2:* Enter the desired server candidates here.

## **Remote System Log**

*Router LAN client IP address:* Displays the client IP address of the router LAN.

*Server port:* Displays port number of the server.

# Administration

The screenshot shows a web-based administration interface for a router. The top navigation bar includes links for Status, System (which is selected), Services, Network, SMS, Help, and Logout. Below the navigation is a breadcrumb trail: System > Administration > Backup / Flash Firmware > Reboot. The main content area is titled "Router Password". It contains two input fields: "Password (limit 16 characters)" and "Confirmation", each with a key icon and a "Save" button. Below this is a "Remote access" section with a "Remote access" checkbox, an "Enable" radio button, and a "Disable" radio button. At the bottom right are three buttons: "Reset" (red), "Save" (green), and "Apply" (blue).

## Router Password

Login password of the router can be changed here. Enter the new password in the 'Password' field, and enter the same password once again in the 'Confirmation' field.

## Remote Access

This field specifies whether or not to allow remote access of this router.

After changing password and/or specifying remote access, click . The screen will display a confirmation message after successful password change.

# Backup / Flash Firmware

The screenshot shows the 'System' tab selected in the top navigation bar. Below it, the 'Backup / Flash Firmware' section is active. The interface is divided into several sections:

- Backup / Restore:** Allows generating a backup archive or resetting the firmware to defaults.
- Flash new firmware image:** Uploads a sysupgrade-compatible image to replace the running firmware, with an option to keep settings.
- Flash new module firmware image:** Uploads a module upgrade compatible image to replace the running firmware.
- Flash new ipkg package:** Uploads a new ipkg package.
- FOTA:** Configure auto-check intervals and links for router and module updates.

## Backup / Restore

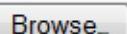
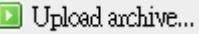
### Download backup

Here you can backup all current settings of the router to a TAR archive file on your computer or mobile device. Just click **Generate archive**. A dialog window will prompt you to open or save the archive file. Depending on the browser that you are using, the TAR file may be saved in the system download folder or a location of your choice.

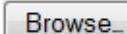
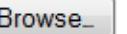
## **Reset to defaults**

Here you can restore the router to its original factory settings. Just click  , and a dialog message will appear to indicate the factory reset process. After completion of the reset process, the router will automatically reboot and return to its initial login prompt.

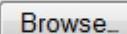
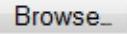
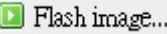
## **Restore backup**

Here you can restore router settings previously saved as a TAR archive file on your computer or mobile device. Just click  to find and select the previously saved TAR archive file, and then click ‘Open’. Confirm that the TAR filename appears beside the  button and click  . The system will reboot after completion of backup restoration.

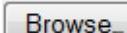
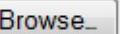
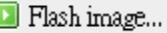
## **Flash new firmware image**

This option allows you to upgrade this router with the updated firmware image. Just click  to find and select the firmware image file, and then click ‘Open’. Confirm that the firmware filename appears beside the  button and click  . The system will reboot after successful upgrade.

## **Flash new module firmware image**

This option allows you to upgrade this router with the updated module firmware image. Just click  to find and select the firmware package file, and then click ‘Open’. Confirm that the firmware filename appears beside the  button and click  . The system will reboot after successful upgrade.

## **Flash new ipkg package**

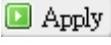
This option allows you to upgrade this router with the updated IPKG package. Just click  to find and select the IPKG package file, and then click ‘Open’. Confirm that the IPKG package filename appears beside the  button and click  . The system will reboot after successful upgrade.

## **FOTA**

This option (Firmware Over The Air) allows you to automatically or manually upgrade this router’s firmware wirelessly.

For automatic wireless update, enable “Auto check” and enter the desired time interval (in hours) between each check of the BandRich website for firmware

update. For manual wireless update, disable “*Auto check*”. Confirm that the “*Check link for Router*” and “*Check link for Module*” fields have appropriate web address(es) present in their text boxes, i.e.

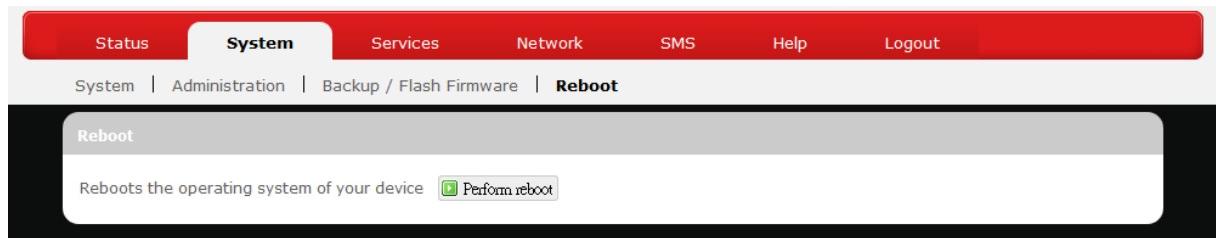
<http://www.bandrich.com/mdm9x15/> . Click  to activate the wireless update configurations into effect.

To immediately check for firmware upgrade, click **Check**.



**Warning:** Upgrading firmware may take a few minutes; do not turn off the power or press the Reset button during upgrade.

## Reboot

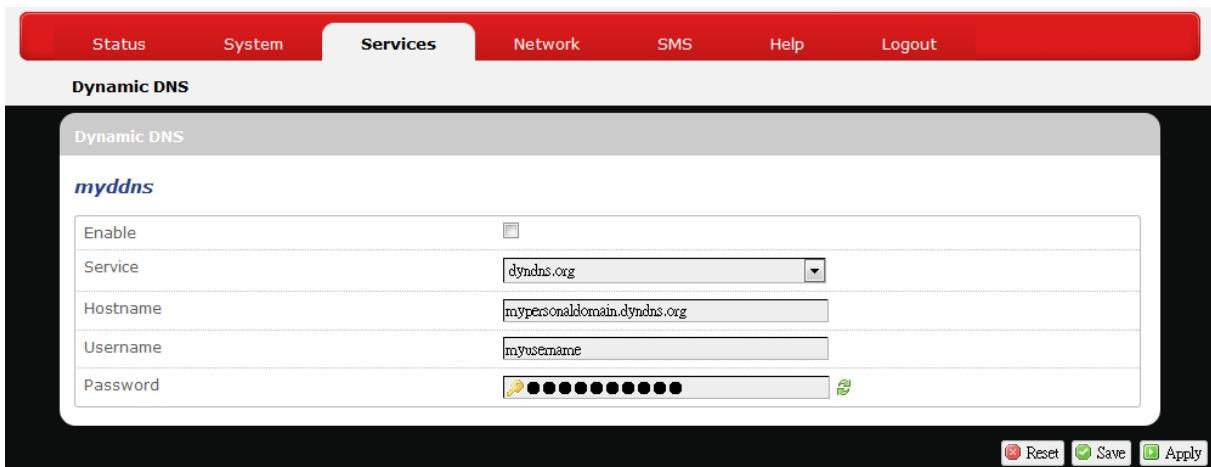


The screenshot shows a red header bar with tabs: Status, System (which is selected), Services, Network, SMS, Help, and Logout. Below the header, a navigation menu includes System, Administration, Backup / Flash Firmware, and Reboot. The main content area has a grey header labeled "Reboot". Below it, a white box contains the text "Reboots the operating system of your device" followed by a button labeled "Perform reboot".

Click ‘Perform reboot’ to restart the router.

# Services

## Dynamic DNS



The **Services** menu hosts configuration options for DDNS (Dynamic Domain Name Service), which is a system that allows the domain name data held in a name server to be updated in real time. It allows an Internet domain name to be assigned to a computer with a varying (dynamic) IP address. Before you can use this feature, you need to sign up for DDNS with a DDNS provider, [www.dyndns.org](http://www.dyndns.org) or [www.TZO.com](http://www.TZO.com).

**Enable:** Check or un-check this box to enable or disable DDNS.

**Service:** Specifies the DDNS service URL. From the drop-down list, click ▾ and select an URL from the list.

**Hostname:** Enter the hostname for your DDNS account.

**Username:** Enter the username for your DDNS account.

**Password:** Enter the password for your DDNS account.

# Network

## Interfaces

The screenshot shows a network management interface with a red header bar containing links for Status, System, Services, Network (which is highlighted in white), SMS, Help, and Logout. Below the header is a navigation menu with links for Interfaces, Mobile Internet, Router, Wi-Fi, Firewall, Diagnostics, and UPnP. The main content area is titled "Interface Overview" and contains two sections: "LAN" and "WAN".

Network	Status	Actions
LAN br-lan	Uptime: 0h 50m 37s MAC-Address: 00:26:FA:0B:35:12 RX: 2.84 MB (19379 Pkts.) TX: 8.19 MB (18441 Pkts.) IPv4: 192.168.1.1/24	Edit
WAN usb0	Uptime: 0h 47m 13s MAC-Address: DA:A7:25:91:C7:34 RX: 4.21 MB (4885 Pkts.) TX: 503.49 KB (3824 Pkts.) IPv4: 100.72.106.108/30	Edit

The **Interfaces** submenu allows interface configurations of different networks connected to this router. The configuration items are the same for each network with different default settings.

### Interface Overview

Here you can see the brief network status summary for LAN (local area network) and WAN (wide area network). To configure LAN or WAN interfaces, click the appropriate **Edit** button and follow the below section *Common Configuration* for more details.

## Common Configuration

### General Setup

The screenshot shows the 'Common Configuration' interface with the 'General Setup' tab selected. At the top, it displays network statistics: Uptime (0h 51m 21s), MAC-Address (00:26:FA:0B:35:12), RX (2.88 MB (19657 Pkts.)), TX (8.55 MB (18803 Pkts.)), and IPv4 (192.168.1.1/24). Below this, there are fields for Protocol (set to 'Static address'), IPv4 address (192.168.1.1), IPv4 netmask (255.255.255.0), IPv4 gateway, IPv4 broadcast, Use custom DNS servers, Accept router advertisements (unchecked), Send router solicitations (checked), IPv6 address, and IPv6 gateway.

- Status:** Displays protocol-dependent statistics of network connection.
- Protocol:** Specifies the protocol to be used for the network. The available protocols are *Static address*, *DHCP client*, *Unmanaged*, *PPP*, *PPPoP*, *PPPoE*, *PPPoATM*, *UTMS/GPRS/EV-DO*, and *L2TP*. The default LAN protocol is *Static address*, whereas the default WAN protocol is *DHCP client*.
- Really switch protocol:** This configuration item appears when the protocol is changed. Press to confirm protocol change and show protocol-dependent configuration items.
- (Protocol-dependent configuration items):** Different protocol-dependent configuration items will appear according to the protocol chosen.

## Advanced Settings

This screenshot shows the 'Advanced Settings' tab under 'Common Configuration'. It includes fields for 'Bring up on boot' (checked), 'Override MAC address' (00:26:FA:0B:35:12), 'Override MTU' (1500), and 'Use gateway metric' (0).

This tab is for advanced users to make detailed configurations of protocol-related settings. Actual configuration items will vary according to the protocol chosen in the tab item *General Setup*.

## Physical Settings

This screenshot shows the 'Physical Settings' tab under 'Common Configuration'. It lists available interfaces: Ethernet Switch: "eth0", VLAN Interface: "eth0.1" (lan), Ethernet Adapter: "usb0" (wan), Wireless Network: Master "BR\_LTE\_3512" (lan), and Custom Interface: [ ].

This tab is for selection of physical interface of the associated network. Click one of the available physical interfaces or click **Custom Interface:** and enter your own interface name.

This tab is not available for the following protocols: *PPP*, *PPtP*, *PPPoE*, *PPPoATM*, *UTMS/GPRS/EV-DO*, and *L2TP*.

## Firewall Settings

This screenshot shows the 'Firewall Settings' tab under 'Common Configuration'. It allows creating or assigning firewall zones to an interface. The 'Create / Assign firewall-zone' section shows 'lan:' assigned to 'lan' (green background). Other options include 'wan:' (red background), 'wan2: (empty)', and 'unspecified -or- create: [ ]'. A note at the bottom states: 'Choose the firewall zone you want to assign to this interface. Select unspecified to remove the interface from the associated zone or fill out the create field to define a new zone and attach the interface to it.'

This tab is for adjustment of firewall settings.

Click the desired network as the desired firewall zone assigned to this interface. Furthermore, you can remove the interface from the associated zone by entering “unspecified” in the *unspecified -or- create* field and clicking **Apply**, or

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you can define a new zone by entering your own firewall name in the *unspecified -or- create* field and clicking  **Apply**.

## Mobile Internet

The screenshot shows a web-based configuration interface for a mobile router. At the top, there's a red navigation bar with tabs for Status, System, Services, Network (which is selected), SMS, Help, and Logout. Below the navigation bar, a horizontal menu bar includes Interfaces, Mobile Internet (selected), Router, Wi-Fi, Firewall, Diagnostics, and UPnP. The main content area has four tabs: WWAN Setting (selected), U/SIM PIN Management, SIM Management, and Preferred Network. The WWAN Setting tab displays 'Network Settings' with options like Roaming Connection (disabled), Update Profile, Update PRL, APN Update (version 3.154), and APN selection (Auto or Manual). Below this is an 'Auto APN Information' section with a single entry: APN internet.

The **Mobile Internet** submenu is for setup and adjustment of mobile internet connection and furthermore has four setting tabs: **WWAN Setting**, **U/SIM PIN Management**, **SIM Management**, and **Preferred Network**.

## WWAN Setting

The screenshot shows the 'Network Settings' page of a BandLuxe router's web interface. The top navigation bar includes links for Status, System, Services, Network (which is the active tab), SMS, Help, and Logout. Under the Network tab, there are links for Interfaces, Mobile Internet (which is the active sub-tab), Router, Wi-Fi, Firewall, Diagnostics, and UPnP. Below these are four tabs: WWAN Setting (which is the active tab), U/SIM PIN Management, SIM Management, and Preferred Network.

The main content area is titled 'Network Settings' and contains the following sections:

- Roaming Connection:** Shows 'Roaming Connection is disabled' with an 'Enabled' checkbox.
- Update Profile:** Contains an 'Update' button.
- Update PRL:** Contains an 'Update' button.
- APN Update:** Displays 'Version 3.154' and a 'Get latest APN list' button.
- APN:** Shows 'Auto' and 'Manual' options.

Below this is a section titled 'Auto APN Information' showing 'APN' as 'internet'.

The next section is 'APN Profile Settings', which includes a note: 'Please enter the APN profile name before you press the Add button.' It features a text input field and an 'Add' button.

The 'APN' column has a note: 'This section contains no values yet'.

The final section is 'Reset Modem', which includes a 'Reset Modem to defaults' button and a 'Perform reset' button.

At the bottom right are three buttons: 'Reset' (red), 'Save' (green), and 'Apply' (blue).

### Network Settings

**Roaming Connection:** Enables or disables current roaming setting.

**Update Profile:** Click **Update** to update the network profile.

**Update PRL:** Click **Update** to update the PRL (Preferred Roaming List).

**APN Update:** Displays the current APN (Access Point Name) version. To get the latest version of APN, click **Get latest APN list**.

**APN:** ‘Auto’ – Uses automatic APN profile settings for network; this is the default APN setting.  
‘Manual’ – Allows the manual choice of APN Profile

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Settings for network.

Profile Selection: This item appears when APN is set to 'Manual'.

### ***Auto APN Information***

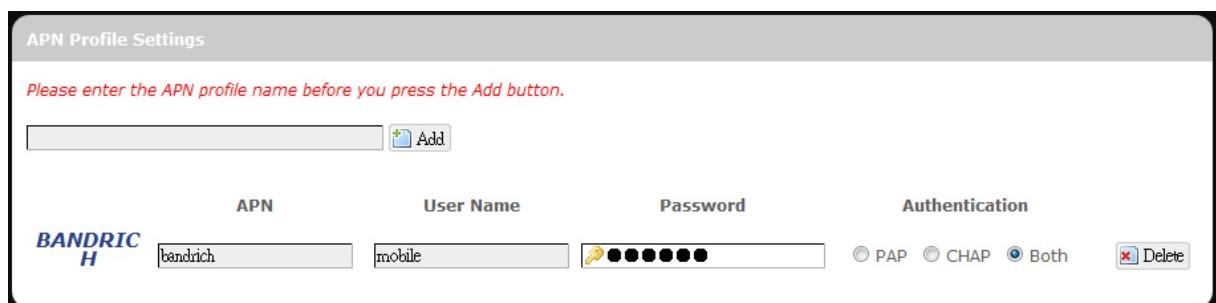
This section displays automatic APN information.

### ***APN Profile Settings***

#### For Advanced Users

This section allows you to establish your own APN profile settings.

To establish a new APN profile, type in a new APN profile name in the text box and click .



The screenshot shows a window titled "APN Profile Settings". A red error message at the top says "Please enter the APN profile name before you press the Add button." Below is a text input field with "bandrich" typed into it, followed by a blue "Add" button with a plus sign. The main configuration area has four tabs: APN, User Name, Password, and Authentication. Under APN, "BANDRIC H" is selected. Under User Name, "bandrich" is typed. Under Password, there is a key icon and a masked password "••••••". Under Authentication, the "Both" radio button is selected. There are also "PAP", "CHAP", and "Delete" buttons.

Enter the APN, username, and password. Click .

### ***Reset Modem***

Click **Perform reset** to reset this router to its factory default settings.

## U/SIM PIN Management

The screenshot shows the 'U/SIM PIN Management' page. At the top, there's a red navigation bar with tabs for Status, System, Services, Network (which is selected), SMS, Help, and Logout. Below the navigation bar, there's a horizontal menu with links for Interfaces, Mobile Internet (selected), Router, Wi-Fi, Firewall, Diagnostics, and UPnP. Underneath the menu, there are four tabs: WWAN Setting, U/SIM PIN Management (selected), SIM Management, and Preferred Network. The main content area has two sections: 'Setting' and 'Change PIN'. In the 'Setting' section, there are three rows: 'SIM Status' (PIN Enable(Verified/Retries:3)), 'PIN Protection' (dropdown menu set to 'enable'), and 'PIN Code' (text input field with a key icon). In the 'Change PIN' section, there are three rows: 'Old PIN Code' (text input field with a key icon), 'New PIN Code' (text input field with a key icon), and 'New PIN Confirm' (text input field with a key icon). At the bottom right of the page are three buttons: 'Reset' (red), 'Save' (green), and 'Apply' (blue).

This submenu features configurable items that are dependent on the router's mobile internet status, as detailed below.

### **Scenario 1: No mobile internet service**

Without a valid SIM card inserted into the router, the Verify dialog will show the following SIM card status:

The screenshot shows the 'Verify' dialog. It has two rows: 'Status:' (Read SIM Fail) and 'PIN Code verify:' (empty text input field with a key icon).

Here the Verify dialog shows SIM status as “Read SIM Fail”, meaning that no valid SIM card is inserted.

### **Scenario 2: Mobile internet service pending**

If a valid SIM card is inserted into the router requiring PIN code verification, the Verify dialog will show the following SIM card status:

The screenshot shows the 'Verify' dialog. It has two rows: 'Status:' (PIN Enable(No Verified/Retries:3)) and 'PIN Code verify:' (empty text input field with a key icon).

Here the Verify dialog shows the SIM status as “No Verified/Retries:3”, meaning that a valid SIM card is inserted with PIN code verification pending. Enter your SIM card verification code in the text box of “PIN Code verify:”, and then click . Once the PIN code verification is finished, the router is

ready to use the SIM card's associated mobile internet access, and the top right status area will be updated accordingly.

Operator Name: No connecting  
WiFi:BR\_LTE\_3512 Counter:0  
Roaming Status:Home  
Signal:



Operator Name: Chunghwa  
WiFi:BR\_LTE\_3512 Counter:0  
Roaming Status:Home  
WCDMA Signal:

Operator Name: Displays the name of the internet service provider

WiFi: Shows the active WiFi SSID of this router

Counter: Shows number of clients currently connected to the active SSID

Roaming Status: Displays current roaming status

(Carrier) Signal: Displays strength of the indicated signal type (Carrier)

For example:

1. Without mobile internet connection, the display will be (no carrier, no signal).

2. If WCDMA (3G) mobile internet connection is established, the display will be (WCDMA carrier, excellent signal strength).

### ***Scenario 3: Mobile internet service enabled***

If a valid SIM card is inserted into the router with PIN code verified, the configuration dialog will be 'Setting' and/or "Change PIN" to allow further SIM card management (click after making changes):

The screenshot shows two stacked configuration panels. The top panel is titled 'Setting' and contains three sections: 'SIM Status' (status: 'PIN Enable(Verified/Retries:3)'), 'PIN Protection' (dropdown menu set to 'enable'), and 'PIN Code' (text input field with a key icon). The bottom panel is titled 'Change PIN' and contains three sections: 'Old PIN Code', 'New PIN Code', and 'New PIN Confirm', each with a text input field and a key icon. At the bottom right of the dialog are three buttons: 'Reset' (red), 'Save' (green), and 'Apply' (blue).

### **Setting**

SIM Status: Shows current SIM card status.  
"PIN Enable" means that the SIM card is enabled for

mobile internet access.

“PIN Disable(Verified/Retries:#)” means that the SIM card is enabled for mobile internet access without requiring PIN code verification. Note that if PIN protection is re-enabled, # is the number of allowed PIN verifications remaining before SIM lock occurs.

- PIN Protection:** Enables or disables the PIN protection by clicking  and making the appropriate choice from the drop-down list.
- PIN Code** If PIN protection is enabled, you need to enter PIN code in this text box for making changes in this ‘Setting’ dialog.

### Change PIN

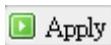
This option is configurable only if PIN Protection is enabled.

Here you can change the PIN code for enhanced SIM card security.

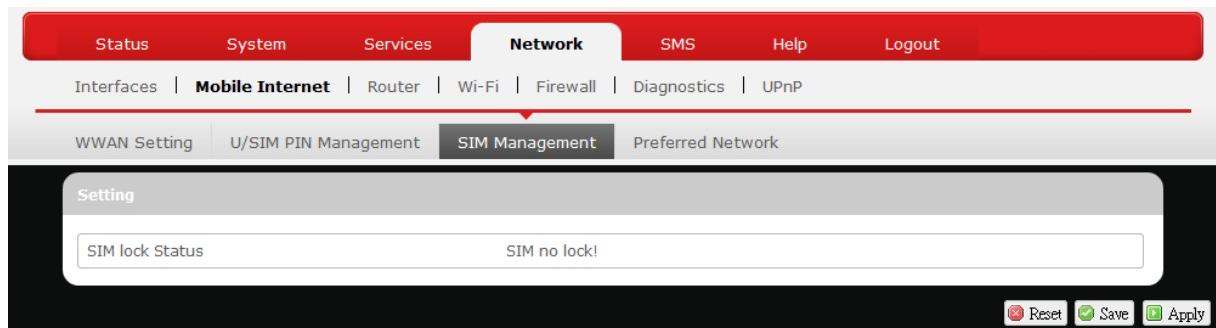
**Old PIN Code:** Enter the old PIN code.

**New PIN code:** Enter the new PIN code.

**New PIN code confirm:** Enter the same new PIN code again for PIN code confirmation.

Click  after making changes in ‘Setting’ and/or “Change PIN”.

### **SIM Management**



The screenshot shows the SIM Management interface. At the top, there's a red navigation bar with tabs for Status, System, Services, Network (which is highlighted), SMS, Help, and Logout. Below the red bar is a grey navigation bar with tabs for Interfaces, Mobile Internet (highlighted), Router, Wi-Fi, Firewall, Diagnostics, and UPnP. Underneath these bars, there's a main content area with a black header labeled "Setting". Inside this area, there's a text box displaying "SIM lock Status" followed by "SIM no lock!". At the bottom right of the content area are three buttons: "Reset" (with a crossed-out icon), "Save" (with a checkmark icon), and "Apply" (with a green checkmark icon).

Here you can see the current SIM lock status.

## **Scenario 1: SIM lock absent**

“SIM no lock” means that the SIM card is unlocked.

A screenshot of a web-based configuration interface. At the top, there is a header bar with the word "Setting". Below it is a table-like structure with two columns. The left column contains the text "SIM lock Status". The right column contains the text "SIM no lock!". The entire interface has a light gray background and a clean, modern look.

## **Scenario 2: SIM lock present**

If your SIM card is locked for some reason, here you can also enter the SIM unlock code to unlock it. After entering the SIM unlock code in the text box “SIM Unlock”, click **Apply**.

A screenshot of a web-based configuration interface. At the top, there is a header bar with the word "setting". Below it is a table-like structure with two columns. The left column contains the text "SIM Unlock". The right column is a large empty text input field. The entire interface has a light gray background and a clean, modern look.

## **Preferred Network**

A screenshot of a web-based configuration interface. The top navigation bar includes tabs for "Status", "System", "Services", "Network" (which is highlighted in red), "SMS", "Help", and "Logout". Below the navigation bar, there are several links: "Interfaces", "Mobile Internet" (which is highlighted in blue), "Router", "Wi-Fi", "Firewall", "Diagnostics", and "UPnP". A secondary navigation bar below shows "WWAN Setting", "U/SIM PIN Management", "SIM Management", and "Preferred Network" (which is highlighted in red). The main content area is titled "Network Type" and contains a dropdown menu labeled "Network Type:" with "Auto" selected. At the bottom right of the content area are "Reset" and "Apply" buttons. The interface uses a dark theme with red and blue highlights for active tabs and links.

Here you can select the preferred mobile network type by clicking and making a choice from the drop-down list. The default choice is *Auto*. Other available choice examples are *LTE* (4G), *WCDMA* (3G), and *GSM* (2G).

# Router

## Router Settings



## Router IP

A screenshot of the Router IP settings page. It contains four input fields: Local IP Address (192.168.1.1), Subnet Mask (255.255.255.0), Device Name (mylte.br), and MTU (1500). Each field has a corresponding help icon (info icon) to its right.

**Local IP Address:** The default local IP address of this router is 192.168.1.1. If this address conflicts with another local network device, you can enter another local IP address here.

**Subnet Mask:** Displays current Subnet Mask

**Device Name:** The current device name is displayed in gray color. The device name can be changed by typing in the new device name in this text box.

**MTU:** The current MTU (maximum transmission unit with default value of 1500 bytes) is displayed in gray color. The MTU can be changed by typing in the new MTU value in this text box.

## DHCP Service

The screenshot shows the 'DHCP Service' configuration page. It includes fields for enabling/disabling the service, setting the start IP address (100), specifying the maximum number of users (150), defining the client lease time (720 minutes), and defining the IP address range (192.168.1.100-249). It also includes fields for primary and secondary DNS servers.

Setting	Value	Description
DHCP Server	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Enables or disables the DHCP Server feature.
Start IP Address	100	Specifies the starting number of the last 3 digits of assigned client IP address.
Maximum Number of Users	150	Specifies maximum number of users for this router. The default setting is 150 users.
Client Lease Time	720	Specifies the amount of lease time allocated to clients of this router, i.e. the expiry time of leased addresses. Use 'h' to indicate hours or use 'm' to indicate minutes.
IP Address Range	192.168.1.100-249	Displays assignable local IP address range of this router
Primary DNS		If needed, specify the primary Domain Name System here.
Secondary DNS		If needed, specify the secondary Domain Name System here.

- DHCP Server: Enables or disables the DHCP Server feature.
- Start IP Address: Specifies the starting number of the last 3 digits of assigned client IP address. For example, the default value of **100** means that the first assigned client IP address will be **192.168.1.100**; the next assigned client IP address will be **192.168.1.101**; and so on...
- Maximum Number of Users: Specifies maximum number of users for this router. The default setting is **150** users.
- Client Lease Time: Specifies the amount of lease time allocated to clients of this router, i.e. the expiry time of leased addresses. Use 'h' to indicate hours or use 'm' to indicate minutes.
- IP Address Range: Displays assignable local IP address range of this router
- Primary DNS: If needed, specify the primary Domain Name System here.
- Secondary DNS: If needed, specify the secondary Domain Name System here.

## Active DHCP Leases

The screenshot shows the 'Active DHCP Leases' table. It displays one lease entry for a host named 'User-NB2' with an IPv4 address of 192.168.1.194, a MAC address of 20:89:84:85:1A:56, and a lease time remaining of 11h 48m 18s.

Active DHCP Leases			
Hostname	IPv4-Address	MAC-Address	Leasetime remaining
User-NB2	192.168.1.194	20:89:84:85:1A:56	11h 48m 18s

This section displays active DHCP lease information for each client: **Hostname**, **IPv4 address**, **MAC address**, and **Lease time remaining**.

## Static Leases

**Static Leases**

Static leases are used to assign fixed IP addresses and symbolic hostnames to DHCP clients. They are also required for non-dynamic interface configurations where only hosts with a corresponding lease are served. Use the **Add** Button to add a new lease entry. The *MAC-Address* identifies the host, the *IPv4-Address* specifies to the fixed address to use and the *Hostname* is assigned as symbolic name to the requesting host.

Hostname	MAC-Address	IPv4-Address
This section contains no values yet		

**Add** **Reset** **Save** **Apply**

This option allows fixed IP address and symbolic hostname assignments for DHCP clients.

To add a static lease, first click .

**Static Leases**

Static leases are used to assign fixed IP addresses and symbolic hostnames to DHCP clients. They are also required for non-dynamic interface configurations where only hosts with a corresponding lease are served. Use the **Add** Button to add a new lease entry. The *MAC-Address* identifies the host, the *IPv4-Address* specifies to the fixed address to use and the *Hostname* is assigned as symbolic name to the requesting host.

Hostname	MAC-Address	IPv4-Address
<input type="text"/>	<input type="text"/>	<input type="text"/>

**Add** **Delete**

Enter the desired hostname. Choose the desired MAC address and IPv4-Address (click  and select a rule from the drop-down list; if "--Custom--" is selected, the drop-down list will change to a text box to allow you to enter your custom address).

The MAC address is for host identification, whereas the IPv4 address specifies the fixed address for static lease.

To remove any unwanted static lease, just click the corresponding  button.

Click  after making any changes.

## Advanced Routing settings

The screenshot shows the 'Advanced Routing Setting' page under the 'Network' tab. It includes sections for 'Static Routing', 'Routing and Redirection Service', and 'VPN Passthrough'. The 'Static Routing' section has columns for Interface, Target Host-IP or Network, IPv4-Netmask if target is a network, IPv4-Gateway, and Metric. A note says 'This section contains no values yet'. Buttons for 'Add', 'Reset', 'Save', and 'Apply' are at the bottom.

### Static Routing

This option allows fixed network routing path assignment (as opposed to the initial adaptive routing).

To add a static network routing path, click . To remove any unwanted static network routing path, click the corresponding button. Click after making any changes.

A screenshot of the 'Static Routing' configuration table. It has columns for Interface, Target Host-IP or Network, IPv4-Netmask if target is a network, IPv4-Gateway, and Metric. A 'Delete' button is shown next to the last row.

Interface	Target Host-IP or Network	IPv4-Netmask if target is a network	IPv4-Gateway	Metric
lan	192.168.1.123	255.255.255.255	192.168.1.2	0
wan				

Interface: Click and choose 'lan' (local area network) or 'wan' (wide area network).

Target: Enter the target host IP or network address here.

IPv4-Netmask: Displays the IPv4-Netmask address (the default is 255.255.255.255). A custom IPv4-Netmask can also be specified here.

IPv4-Gateway: If needed, a custom IPv4-Gateway address can be

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specified here.

- Metric: Specifies the network path priority number (usually associated with the network path's administrative distance). The lower the metric number, the higher priority of this static route in the network routing protocol.  
The default value is 0 (highest priority). A different metric number can also be specified here.

**Note:** If contents in the text box is invalid, a  will appear on the right side of the text box, and the text color changes to red. For example, the following demonstrates an invalid target Host-IP or Network address: 

## ***Routing and Redirection Service***

This option enables or disables Network Address Translation (NAT) service, which is a standard that allows multiple computers on a private network to share a single IP address.

### ***VPN Passthrough***

A Virtual Private Network (VPN) is a type of secured private network connection, built upon publicly-accessible infrastructure such as the Internet. They usually provide connectivity to various devices behind a gateway or firewall.

- IPSec Passthrough: IP Security (IPSec) provides authentication and encryption. Since it is mainly a Layer 3 technology, it can secure all data on the network. To allow IPSec tunnels to pass through the Router, click 'Enabled'.
- PPTP Passthrough: Point-to-Point Tunneling Protocol (PPTP) allows you to establish a connection to an enterprise network. To allow PPTP tunnels to pass through the Router, click Enabled.
- L2TP Passthrough: Layer 2 Tunneling Protocol (L2TP) is an extension of the Point-to-Point Tunneling Protocol and is also used to establish virtual private networks. To allow L2TP tunnels to pass through the Router, click Enabled.

## WiFi



This submenu item is for configuring all Wi-Fi-related settings. This router supports up to two WiFi SSIDs. The default SSID is as follows:

Tab Name	Corresponding SSID	Default Password
"BR_LTE_xxxx"	BR_LTE_xxxx	The last 4 digits of MAC address (xxxx) converted into 2-digit decimal numbers, please see table below for conversion method.

Hexadecimal Digit	Decimal Number	Hexadecimal Digit	Decimal Number
0	00	8	08
1	01	9	09
2	02	A	10
3	03	B	11
4	04	C	12
5	05	D	13
6	06	E	14
7	07	F	15

SSID and Password Example:

MAC Address	Corresponding SSID	Default Password
0026FA0B314A	BR_LTE_314A	03010410

Each tab has identical sets of configuration categories:

**Device Configuration** and **Interface Configuration**.

Please click after making any changes in this submenu.

# Device Configuration

## General Setup

The screenshot shows the 'Device Configuration' interface with the 'General Setup' tab selected. Under 'Wireless network is enabled', there is a red-bordered 'Disable' button. A dropdown menu for 'Channel' is set to '9 (2.452 GHz)'.

or

The screenshot shows the 'Device Configuration' interface with the 'General Setup' tab selected. Under 'Wireless network is disabled', there is a green-bordered 'Enable' button. A dropdown menu for 'Channel' is set to '9 (2.452 GHz)'.

Wireless network is enabled\*

WiFi connection of the associated SSID is enabled.

To disable WiFi connection of this SSID, click .

Wireless network is disabled\*

WiFi connection of the associated SSID is disabled.

To enable WiFi connection of this SSID, click .

\* Note: The associated SSID is displayed either in the selected submenu tab under WiFi or in the WiFi category item **Interface Configuration → General Setup → SSID**.

The screenshot shows the 'Interface Configuration' interface with the 'General Setup' tab selected. Under 'SSID', the value 'BR\_LTE\_3512' is highlighted with a red border.

Channel:

Selects the WiFi channel for communication. The available choices are:

Channel (carrier frequency)

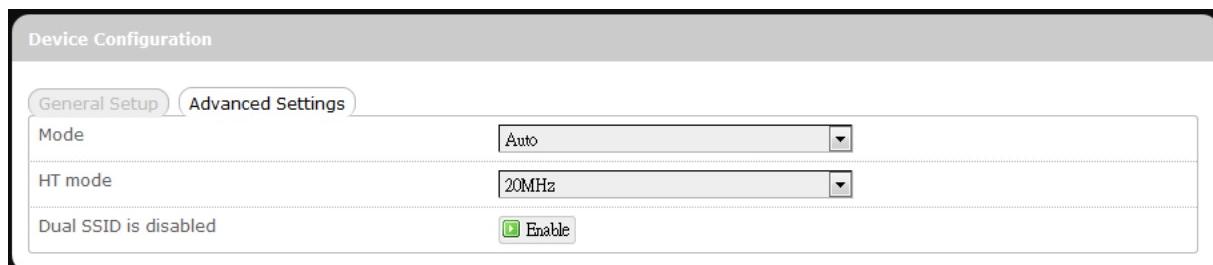
- 1 (2.412 GHz)
- 2 (2.417 GHz)
- 3 (2.422 GHz)
- 4 (2.427 GHz)
- 5 (2.432 GHz)
- 6 (2.437 GHz)

---

7 (2.442 GHz)  
 8 (2.447 GHz)  
 9 (2.452 GHz)  
 10 (2.457 GHz)  
 11 (2.462 GHz)  
 auto                   ← assigns channel automatically  
 -- custom --         ← manually specifies WiFi channel

Normally one of the channels is already selected, and no change is needed unless there exists interference problems with other WiFi or Bluetooth devices (that also use the 2.4GHz frequency range for communications). Alternatively, you can select ‘auto’ to let the system select the channel automatically, or you can select “-- custom --” and enter your own channel specification in the text box.

## ***Advanced Settings***



Mode	Specifies the IEEE wireless standard for WiFi communication. The choices are:	
	Auto:	(Default choice) The router automatically chooses the optimal IEEE wireless standard.
	802.11b:	Data speed up to 11 Mbps
	802.11g:	Data speed up to 54 Mbps
	802.11n:	Data speed up to 300 Mbps
HT mode	Specifies channel width for data communications. The choices are:	
	20MHz:	Single 20MHz channel
	20MHz / 40MHz	Single or dual 20MHz channels
Dual SSID is disabled/enabled	Click  to activate the second SSID, or click  to deactivate the second SSID.	

## Interface Configuration

## **General Setup**

**Interface Configuration**

**General Setup** **Wireless Security** **MAC-Filter** **Advanced Settings** **WPS Settings**

SSID	BR_LTE_3512
Mode	ap
Hide SSID	<input type="checkbox"/>

SSID	Service Set Identification To change the SSID, click the text box and enter the new SSID (up to 32 alphanumeric characters)
Mode	Wireless operating mode of this router. AP: Wireless Access Point
Hide SSID	Enable this option to make wireless network of <i>this</i> SSID unavailable to nearby WiFi clients. Disable this option to make wireless network of <i>this</i> SSID available to nearby WiFi clients (default setting).



**CAUTION:** To enable “Hide SSID”, we strongly advise you to do so via wired LAN connection, since wireless LAN connection with this SSID will be lost with this option applied! If both SSIDs are hidden, then the communications with this router must be done via a LAN port, or this router must be reset to factory default settings.

## **Wireless Security**

### Interface Configuration

General Setup Wireless Security MAC-Filter Advanced Settings WPS Settings

Encryption	<input type="text" value="WPA-PSK"/>
Cipher	<input type="text" value="Force CCMP (AES)"/>
Key	

This router supports wireless data encryption, a must for wireless data security. The Wireless Security Interface Configuration items will change according to the chosen encryption method.

The encryption options are:

#### 1. No Encryption



D

Interface Configuration

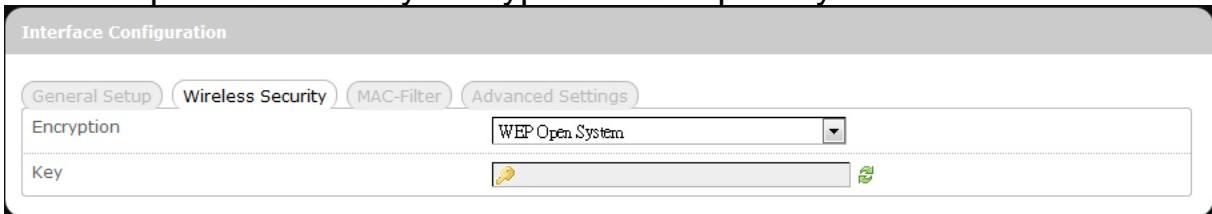
General Setup Wireless Security MAC-Filter Advanced Settings

Encryption: No Encryption

Data transmitted over wireless networks can be seen by others.

#### 2. WEP Open System

Wired Equivalent Privacy encryption with Open System authentication



K

Interface Configuration

General Setup Wireless Security MAC-Filter Advanced Settings

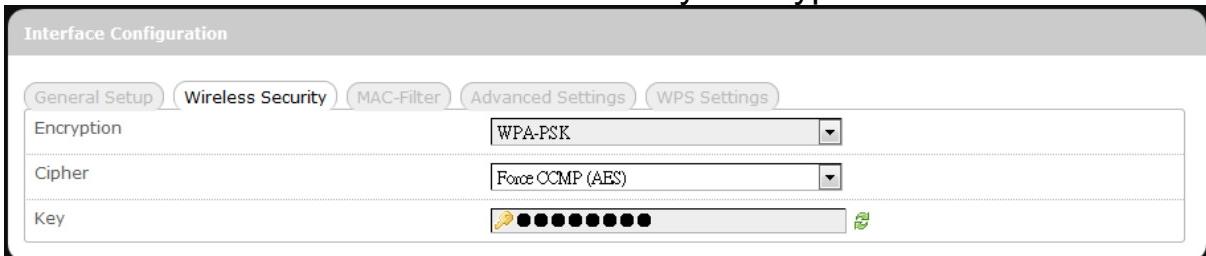
Encryption: WEP Open System

Key:

Key: Enter a password for accessing this SSID's wireless network.

#### 3. WPA-PSK

"WiFi Protected Access – Pre-Shared Key" encryption



Interface Configuration

General Setup Wireless Security MAC-Filter Advanced Settings WPS Settings

Encryption: WPA-PSK

Cipher: Force CCMP (AES)

Key:

Cipher: Specify the desired encryption protocol by clicking  and selecting an option from the drop-down list:

*auto* – (default setting) the system automatically chooses the optimal encryption protocol

*Force CCMP (AES)* – Use CCMP (AES) encryption exclusively (stronger than TKIP)

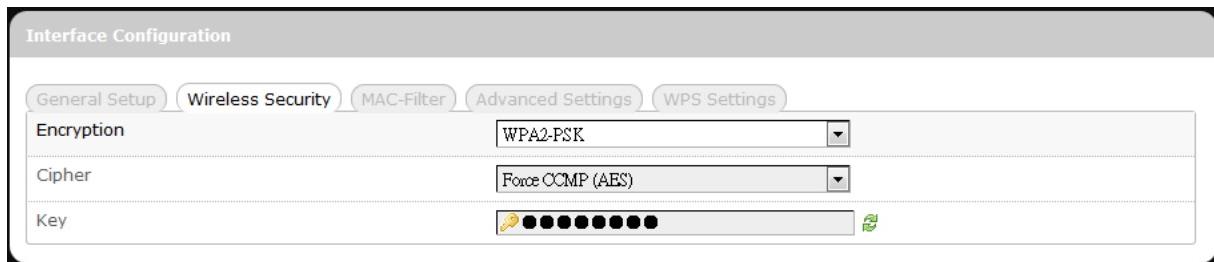
*Force TKIP* – Use TKIP encryption exclusively

*Force TKIP and CCMP (AES)* – Use TKIP and CCMP (AES) encryption protocols together

Key: Enter a password for accessing this SSID's wireless network.

#### 4. WPA2-PSK

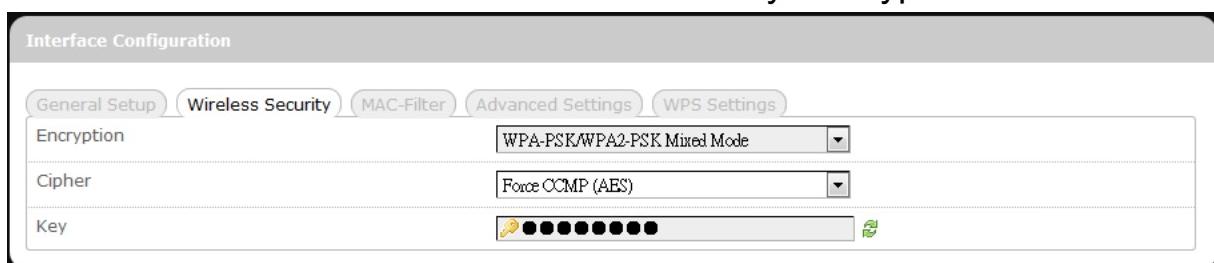
"WiFi Protected Access II – Pre-Shared Key" encryption



- Cipher: Specifies the desired encryption protocol by clicking  and selecting an option from the drop-down list:
- auto* – (Default setting) the system automatically chooses the optimal encryption protocol
  - Force CCMP (AES)* – Use CCMP (AES) encryption exclusively (stronger than TKIP)
  - Force TKIP* – Use TKIP encryption exclusively
  - Force TKIP and CCMP (AES)* – Use TKIP and CCMP (AES) encryption protocols together
- Key: Enter a password for accessing this SSID's wireless network.

## 5. WPA-PSK/WPA2-PSK Mixed Mode

“WiFi Protected Access I + II – Pre-Shared Key” encryption



- Cipher: Specifies the desired encryption protocol by clicking  and selecting an option from the drop-down list:
- auto* – (Default setting) the system automatically chooses the optimal encryption protocol
  - Force CCMP (AES)* – Use CCMP (AES) encryption exclusively (stronger than TKIP)
  - Force TKIP* – Use TKIP encryption exclusively
  - Force TKIP and CCMP (AES)* – Use TKIP and CCMP (AES) encryption protocols together
- Key: Enter a password for accessing this SSID's wireless network.

## 6. WPA-EAP

## “WiFi Protected Access – Extensible Authentication Protocol” encryption

The screenshot shows the 'Wireless Security' tab selected in the 'Interface Configuration' menu. The configuration includes:

- Encryption: WPA-EAP
- Cipher: Force CCMP (AES)
- Radius-Authentication-Server: (empty field)
- Radius-Authentication-Port: Default 1812
- Radius-Authentication-Secret: (key icon)

**Cipher:** Specifies the desired encryption protocol by clicking  and selecting an option from the drop-down list:

*auto* – (default setting) the system automatically chooses the optimal encryption protocol

*Force CCMP (AES)* – Use CCMP (AES) encryption exclusively (stronger than TKIP)

*Force TKIP* – Use TKIP encryption exclusively

*Force TKIP and CCMP (AES)* – Use TKIP and CCMP (AES) encryption protocols together

**Radius-Authentication-Server:** Enter the name of the RADIUS authentication server.

**Radius-Authentication-Port:** Enter the port number of the RADIUS authentication port (the default port number is 1812).

**Radius-Authentication-Secret:** Enter the desired RADIUS secret password.

## 7. WPA2-EAP

### “WiFi Protected Access II – Extensible Authentication Protocol” encryption

The screenshot shows the 'Wireless Security' tab selected in the 'Interface Configuration' menu. The configuration includes:

- Encryption: WPA2-EAP
- Cipher: Force CCMP (AES)
- Radius-Authentication-Server: (empty field)
- Radius-Authentication-Port: Default 1812
- Radius-Authentication-Secret: (key icon)

**Cipher:** Specifies the desired encryption protocol by clicking  and selecting an option from the drop-down list:

---

*auto* – (default setting) the system automatically chooses the optimal encryption protocol

*Force CCMP (AES)* – Use CCMP (AES) encryption exclusively (stronger than TKIP)

*Force TKIP* – Use TKIP encryption exclusively

*Force TKIP and CCMP (AES)* – Use TKIP and CCMP (AES) encryption protocols together

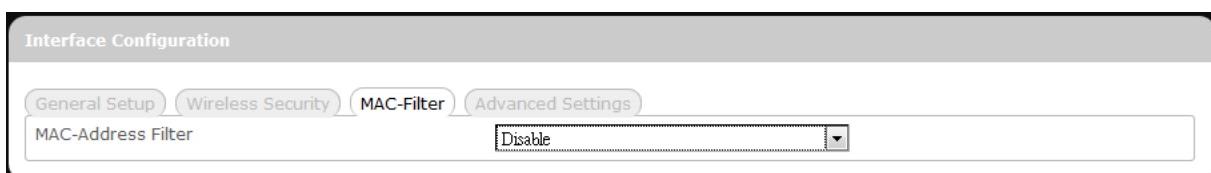
Radius-Authentication-Server: Enter the name of the RADIUS authentication server.

Radius-Authentication-Port: Enter the port number of the RADIUS authentication port (the default port number is 1812).

Radius-Authentication-Secret: Enter the desired RADIUS secret password.

## **MAC-Filter**

MAC-Address Filter:

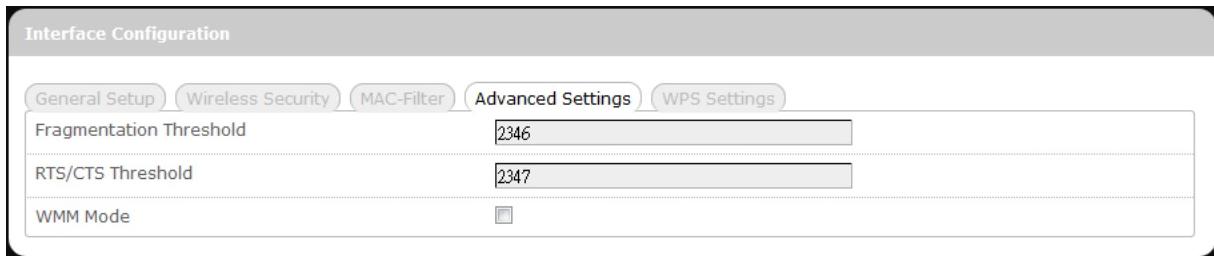


This tab item allows you to selectively allow or block clients from network access. Click  and select an option from the drop-down list:

1. Disable – The MAC address filter is disabled (default option).
2. White list\* – Click  and select a desired MAC address from the drop-down list, or select “-- custom --” and enter a specific client’s MAC address.
3. Black list\* – Click  and select an undesired MAC address from the drop-down list, or select “-- custom --” and enter a specific client’s MAC address.

\* To add another MAC address to the list, click to add a new drop-down list; then repeat the MAC address selection/specification.  
To remove a MAC address from the list, click .

## Advanced Settings

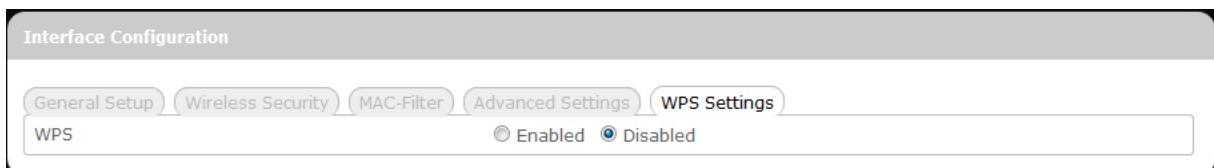


This tab item is for advanced adjustment settings for WiFi connection.

- |                         |  |
|-------------------------|--|
| Fragmentation Threshold | Maximum transmittable data packet frame size without frame fragmentation; the default value is 2346  |
| RTS/CTS Threshold       | Defines Request-To-Send (transmitter) and Clear-To-Send (receiver) control packet size; the default value is 2347  |
| WMM Mode                | Enables or disables Wi-Fi Multimedia Mode, which gives multimedia data contents (voice, video, and audio) higher priority over wireless networks. The default setting of WMM Mode is Disabled. |

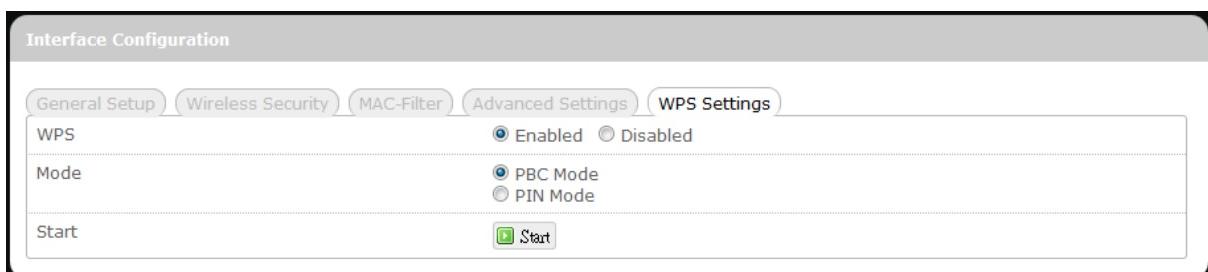
## WPS Settings

### WiFi Protected Setup Settings



This tab item appears when ‘Encryption’ in “Wireless Security” is set to one of the following: **WPA-PSK**, **WPA2-PSK**, or **WPA-PSK/WPA2-PSK Mixed Mode**.

**WPS:** To enable the WPS button for quick WiFi connection setup, click ‘Enabled’, and 2 additional items will appear: Mode and Start.



**Mode:** Specifies WPS setup mode

PBC Mode – Push Button Configuration Mode  
Note: To use this setup method, the client

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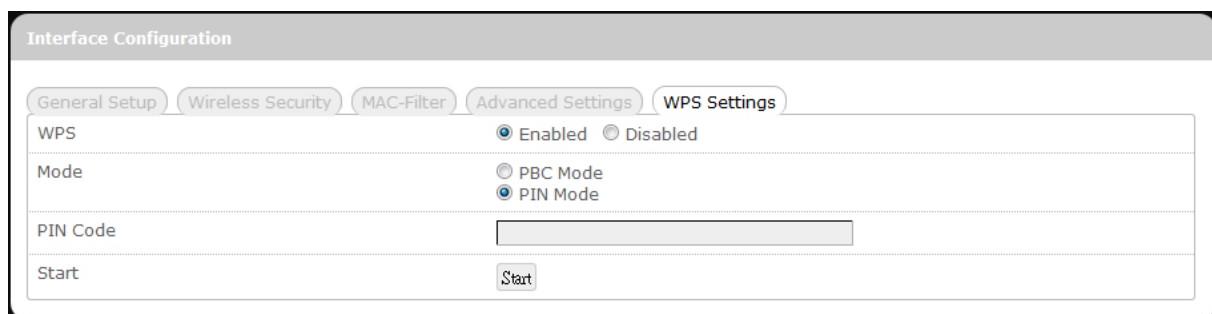
must have a WPS button configured to PBC Mode.)

**PIN Mode – Personal Identification Number Mode**  
(Note: To use this setup method, the client must have a WPS button configured to PIN Mode.)

After choosing PIN Mode, an additional text box item “PIN Code” will appear.

**PIN Code:** This text box item appears when ‘Mode’ is set to “PIN Mode”.

Enter the 8-digit alphanumeric PIN in the text box. This PIN must match the PIN of the router client.



If the PIN entered is invalid, the text color will become red with on the right.

12ABC3

Whenever the PIN entered becomes valid, the text color will be black without on the right.

12ABC345

**Start:** After setting up WPS Mode (PBC or PIN), click the router client’s corresponding hardware/software WPS button (actual router client hardware/software WPS button behavior will depend on router client manufacturer’s design).

Click or press-and-hold the router’s physical SS/WPS/Reset button for just over 3 seconds to start the WPS process.

# Firewall

## Single Port Forward

The screenshot shows a red header bar with tabs: Status, System, Services, Network (which is highlighted in white), SMS, Help, and Logout. Below the header is a navigation bar with links: Interfaces, Mobile Internet, Router, Wi-Fi, Firewall (which is highlighted in blue), Diagnostics, and UPnP. Underneath the navigation bar is a sub-navigation bar with links: Single Port Forward (which is highlighted in dark grey), Port Trigger, Security Filter, DMZ Host, IP Filtering, and Port Range Forward. The main content area has a title "Single Port Forward". It contains a table with columns: Name, Match, Forward to, and Enable. A message below the table says "This section contains no values yet". Below this is a "New port forward:" section with fields for Name (New port forward), Protocol (TCP+UDP), External port (9001), Internal IP address (192.168.1.194), Internal port (9001), and an "Add" button. At the bottom are "Reset", "Save", and "Apply" buttons.

### Single Port Forward

Port Forwarding allows you to set up public services on your network, such as web servers, ftp servers, e-mail servers, and other specialized Internet applications.

To forward a single port:

A configuration dialog titled "New port forward:". It has five input fields: Name (LuxeFWD1), Protocol (TCP+UDP), External port (9001), Internal IP address (192.168.1.194), and Internal port (9001). To the right of the fields is an "Add" button with a plus sign icon.

1. **Name:** Enter an application name for this port forwarding rule.
2. **Protocol:** Click  and select a protocol from the drop down list – *TCP+UDP* (default), *TCP*, *UDP*, or *Other...*
3. **External port:** Enter the port number of the external port used by the server or Internet application. Afterward, this port number will be echoed to the text box of “Internal port”.
4. **Internal IP address:** Click  and select an IP address from drop-down list, or select “--custom--” and enter IP address in text box.
5. **Internal port:** This text box will automatically receive port number entered in the text box of “External port”, or you can enter your own port number in the same text box.
6. Click . The port forwarding rule you have just entered will be added to the Port Forwards list.

Single Port Forward				
Name	Match	Forward to	Enable	
LuxeFWD1	IPv4-TCP, UDP From <i>any host in wan</i> Via <i>any router IP at port 9001</i>	192.168.1.194, port 9001 in <i>lan</i>	<input checked="" type="checkbox"/> (a)	 Edit  Delete (b)
<b>New port forward:</b>				
Name	Protocol	External port	Internal IP address	Internal port
New port forward	TCP+UDP			

In the status area, the message **Unapplied Change** may appear next to “Operator Name” to indicate configuration changes temporarily stored in the router.

7. More rules can be added to the Port Forwards list by repeating Steps 1-6.
8. (a) To enable or disable a Port Forwards list rule, click its check box under ‘Enable’.  
(b) To remove any Port Forwards rule, click its corresponding  Delete button.
9. To edit a particular Port Forwards rule in detail, click its corresponding  Edit button, and the rule’s associated configuration page (much more flexible and detailed than express settings in Steps 1-5) will appear. After making any changes, click  Apply. Finally click  Back to Overview to exit this configuration page.

Rule is enabled	 Disable
Name	LuxeFWD1
Protocol	TCP+UDP
External port	9001 <small>Match incoming traffic directed at the given destination port or port range on this host</small>
Internal IP address	192.168.1.194 (User-NB2) <small>Redirect matched incoming traffic to the specified internal host</small>
Internal port	9001 <small>Redirect matched incoming traffic to the given port on the internal host</small>
Enable NAT Loopback	<input checked="" type="checkbox"/>

**Note:** Numerical and text values shown in the illustrative examples are for demonstration purposes only and are not for actual operation.

## Port Trigger

The screenshot shows a network management interface with a red header bar containing links for Status, System, Services, Network (selected), SMS, Help, and Logout. Below the header are tabs for Firewall (selected) and Diagnostics. Under Firewall, sub-links include Single Port Forward, Port Trigger (selected), Security Filter, DMZ Host, IP Filtering, and Port Range Forward. The main content area is titled "Port Trigger". It has a table with columns: Name, Trigger Range, Forward Range, and Enable. A note below the table says "This section contains no values yet". Below the table are fields for "Name" (New port trigger), "Protocol" (TCP+UDP selected from a dropdown), and "Triggered Range" (Start Port 10, End Port 80). To the right are "Forwarded Range" fields (Start Port 10, End Port 80) and an "Add" button. At the bottom are "Reset", "Save", and "Apply" buttons.

## Port Trigger

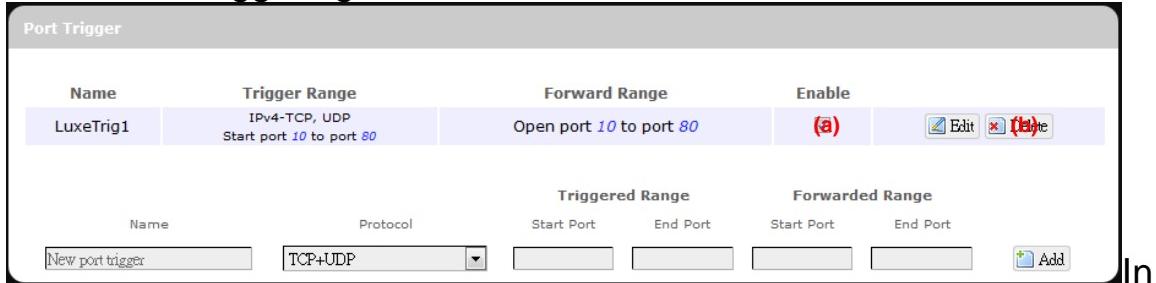
Port Triggering allows the Router to watch outgoing data for specific port numbers. The Router remembers the IP address of the computer that sends the matching data, so that when the requested data returns through the Router, the data is pulled back to the proper computer by way of IP address and port mapping rules.

To add a new Port Triggering rule:

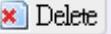
Name	Protocol	Triggered Range	Forwarded Range		
		Start Port	End Port	Start Port	End Port
LuxeTrig1	TCP+UDP	10	80	10	80

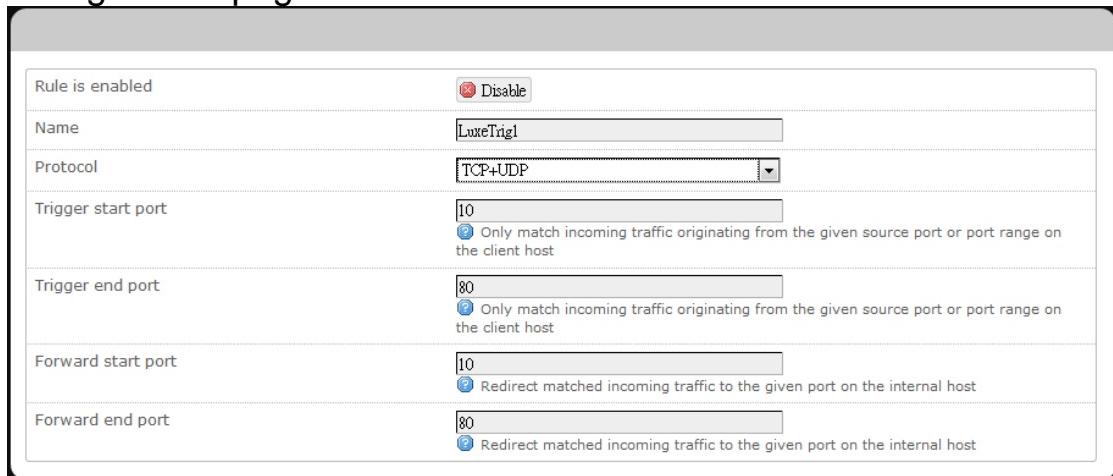
- Name:** enter an application name for this port triggering rule.
- Protocol:** click  and select a protocol from the drop down list – *TCP+UDP* (default), *TCP*, *UDP*, or *Other...*
- Triggered Range:** enter the **Start Port** and **End Port** for the triggered port number range of the Internet application (please check its documentation for the port number(s) needed).
- Forwarded Range:** enter the **Start Port** and **End Port** for the forwarded port number range of the Internet application (please check its documentation for the port number(s) needed).

5. Click  **Add**. The port triggering rule you have just entered will be added to the Port Triggering list.



In the status area, the message **Unapplied Change** may appear next to “Operator Name” to indicate configuration changes stored in the router.

6. More rules can be added to the Port Triggering list by repeating Steps 1-5.
7. (a) To enable or disable a Port Forwards list rule, click its check box under ‘Enable’.  
 (b) To remove any Port Triggering rule, click its corresponding  **Delete** button.
8. To edit a particular Port Triggering rule in detail, click its corresponding  **Edit** button, and the rule’s associated configuration page (more flexible and detailed than express settings in Steps 1-4) will appear. After making any changes, click  **Apply**. Finally click  **Back to Overview** to exit this configuration page.



Rule is enabled	<input checked="" type="checkbox"/> Disable
Name	LuxeTrig1
Protocol	TCP+UDP
Trigger start port	10 <small>Only match incoming traffic originating from the given source port or port range on the client host</small>
Trigger end port	80 <small>Only match incoming traffic originating from the given source port or port range on the client host</small>
Forward start port	10 <small>Redirect matched incoming traffic to the given port on the internal host</small>
Forward end port	80 <small>Redirect matched incoming traffic to the given port on the internal host</small>

**Note:** Numerical and text values shown in the illustrative examples are for demonstration purposes only and are not for actual operation.

## Security Filter

The screenshot shows the 'Firewall' section of the Router's configuration interface. At the top, there are tabs for Status, System, Services, Network (which is selected), SMS, Help, and Logout. Below the tabs, a sub-menu includes Interfaces, Mobile Internet, Router, Wi-Fi, Firewall (selected), Diagnostics, and UPnP. Further down, specific options like Single Port Forward, Port Trigger, Security Filter (selected), DMZ Host, IP Filtering, and Port Range Forward are listed. The main content area is divided into three sections: 'Firewall', 'Internet Filter', and 'Web Filters'. The 'Firewall' section contains a checkbox for SPI Firewall Protection, which is currently enabled. The 'Internet Filter' section contains checkboxes for Filter Anonymous Internet Requests, Filter Multicast, Filter Internet NAT Redirection (which is checked), and Filter IDENT(Port 113). The 'Web Filters' section contains checkboxes for Proxy, Java, ActiveX, and Cookies. At the bottom right are buttons for Reset, Save, and Apply.

Here you can make **Firewall**, **Internet Filter**, and **Web Filters** adjustments for network security.

### **Firewall**

SPI Firewall Protection: Enable or Disable Stateful Packet Inspection (SPI) feature of the firewall. The default setting is ‘Enable’.

### **Internet Filter**

Filter Anonymous Internet Requests: This filter blocks anonymous internet requests from outside network. The default setting is ‘disabled’.

Filter Multicast: Multicasting allows for multiple transmissions to specific recipients at the same time, i.e. the Router allows IP multicast packets to be forwarded to the appropriate computers.

To allow multicasting, disable “Filter Multicast” (this is the default setting).

To block multicasting, enable “Filter Multicast”.

Filter Internet NAT Redirection: This filter blocks local resource access via NAT (Network Address Translation) redirection (i.e.

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external address) from other local computers. The default setting is 'enabled'.

**Filter IDENT  
(Port113):**

This feature keeps Port 113 from being scanned by devices outside of your local network. The default setting is 'disabled'.

### ***Web Filters***

Using the Web Filters feature, you may enable up to four specific filtering methods.

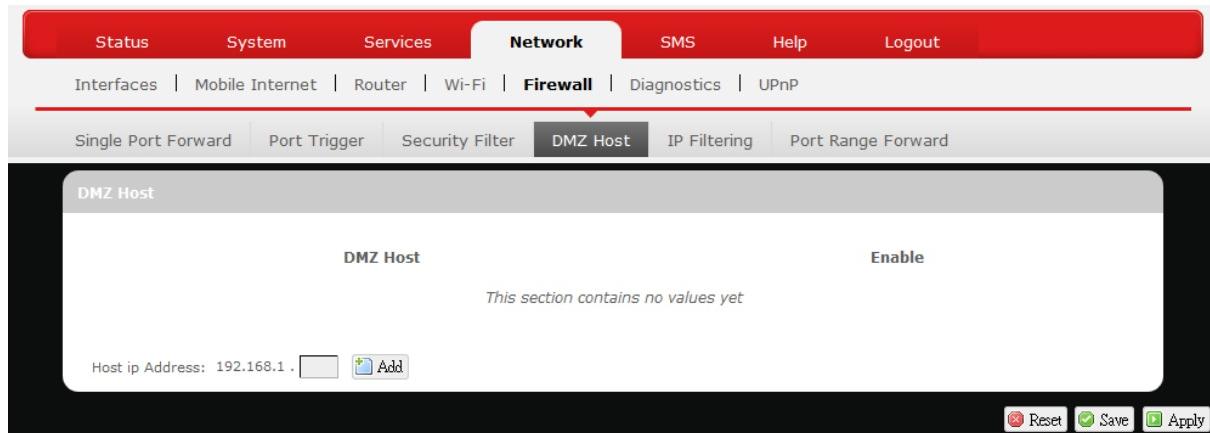
**Proxy:** Use of WAN proxy servers may compromise the Router's security. Select this option to disable access to any WAN proxy servers.

**Java:** Java is a programming language for websites. Select this option to disable Java. If you disable Java, you run the risk of not having access to Internet sites created using this programming language.

**ActiveX:** ActiveX is a programming language for websites. Select this option to disable ActiveX. If you disable ActiveX, you run the risk of not having access to Internet sites created using this programming language.

**Cookies:** A cookie is data stored on your PC and used by Internet sites when you interact with them. Select this option to disable cookies.

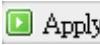
### **DMZ Host**

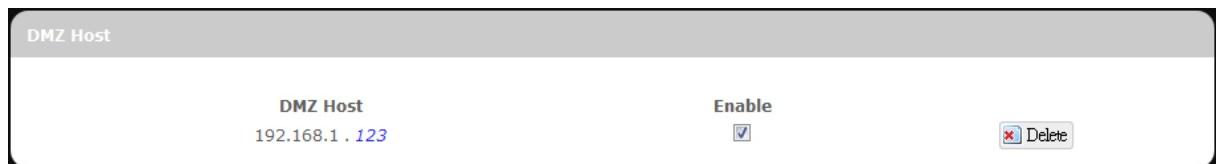


When a firewall is used, it is sometimes necessary to place some clients (for example Internet games, video conferencing, or VPN connections) outside of the firewall while leaving the others protected. You can do this using a Demilitarized Zone (DMZ). This DMZ Host feature allows you to specify the IP

address of the computers that are placed outside the firewall of your network. In the text box, enter the last 3 digits of the DMZ host address (the prefix is 192.168.1 for this router), and then click .

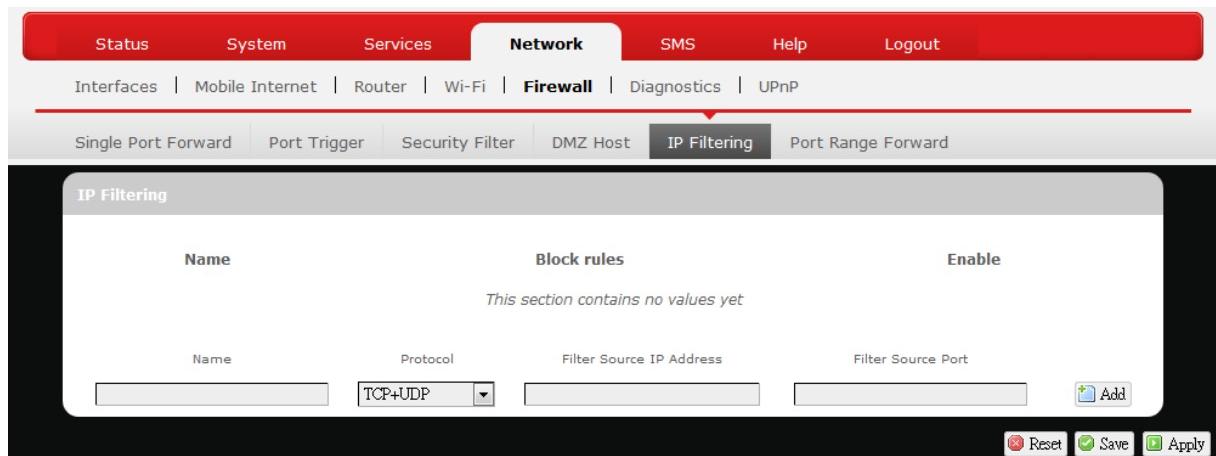
Host ip Address: 192.168.1. 123 

The host IP address will be added to the DMZ Host list, which can be further disabled or enabled by clicking the 'Enable' checkbox. To remove this DMZ Host, click . After setting up the DMZ host, click .



DMZ Host	Enable
192.168.1.123	<input checked="" type="checkbox"/> 

## IP Filtering

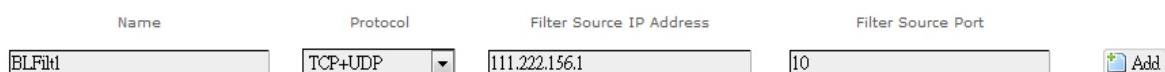


Name	Block rules	Enable		
This section contains no values yet				
Name	Protocol	Filter Source IP Address	Filter Source Port	
<input type="text"/>	TCP+UDP 	<input type="text"/>	<input type="text"/>	  

## IP Filtering

IP Filtering allows the Router to discard data from certain IP addresses.

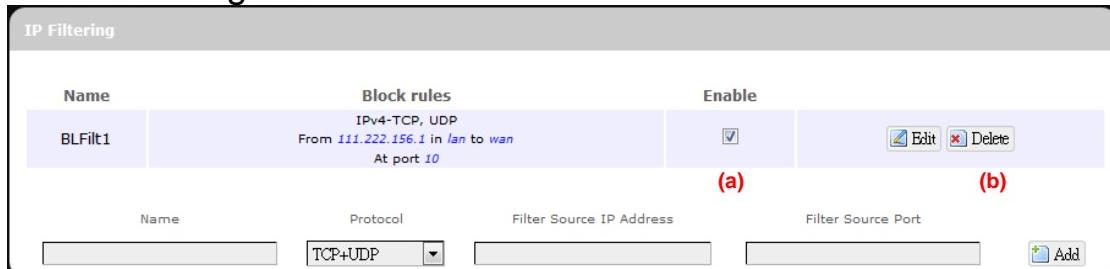
To add a new IP filtering rule:



Name	Protocol	Filter Source IP Address	Filter Source Port
<input type="text"/> BLFilt	TCP+UDP 	<input type="text"/> 111.222.156.1	<input type="text"/> 10 

- Name:** Enter an application name for this IP filtering rule.
- Protocol:** Click  and select a protocol from the drop down list – *TCP+UDP* (default), *TCP*, *UDP*, or *Other...*
- Filter Source IP Address:** Enter the source IP address to be filtered. The text color will turn red with  on the right for any invalid IP address entered (e.g.  ). When the IP address entered becomes valid, the text color changes back to black without  on the right (e.g. ).

4. **Filter Source Port:** Enter the source port number to be filtered.
5. Click  . The IP filtering rule you have just entered will be added to the IP Filtering list.



Name	Block rules	Enable
BLFilt1	IPv4-TCP, UDP From 111.222.156.1 in <i>lan</i> to <i>wan</i> At port 10	<input checked="" type="checkbox"/>

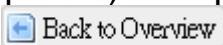
(a) (b)

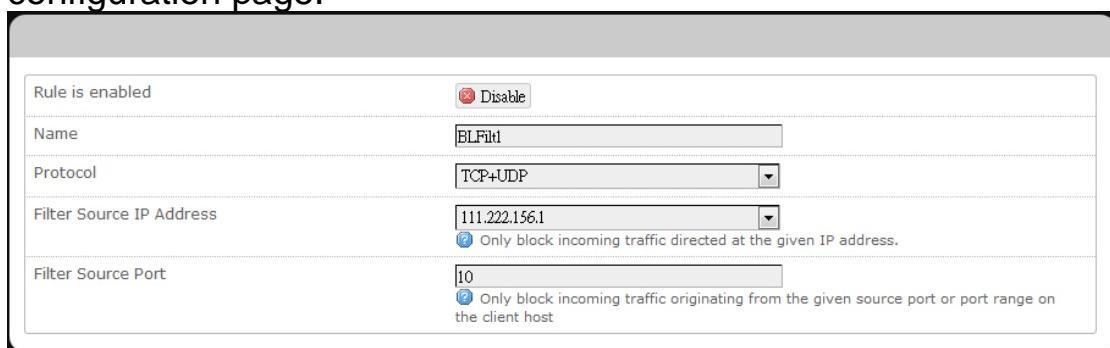
 

Name                    Protocol                    Filter Source IP Address                    Filter Source Port



In the status area, the message **Unapplied Change** may appear next to “Operator Name” to indicate configuration changes stored in the router.

6. More rules can be added to the IP filtering list by repeating Steps 1-5.
7. (a) To enable or disable an IP filtering list rule, click its check box under ‘Enable’.
- (b) To remove any Port Triggering rule, click its corresponding  button.
8. To edit a particular IP filtering rule in detail, click its corresponding  button, and the rule’s associated configuration page (more flexible and detailed than express settings in Steps 1-4) will appear. After making any changes, click  . Finally click  to exit this configuration page.



Rule is enabled	<input checked="" type="checkbox"/> Disable
Name	BLFilt1
Protocol	TCP+UDP
Filter Source IP Address	111.222.156.1
Filter Source Port	10

(?) Only block incoming traffic directed at the given IP address.

(?) Only block incoming traffic originating from the given source port or port range on the client host

**Note:** Numerical and text values shown in the illustrative examples are for demonstration purposes only and are not for actual operation.

## Port Range Forward

The screenshot shows a top navigation bar with tabs: Status, System, Services, Network (highlighted in red), SMS, Help, and Logout. Below the navigation is a secondary row of links: Interfaces, Mobile Internet, Router, Wi-Fi, Firewall (highlighted in blue), Diagnostics, and UPnP. A horizontal red line highlights the Firewall link. Below this is a sub-navigation bar with links: Single Port Forward, Port Trigger, Security Filter, DMZ Host, IP Filtering, and Port Range Forward (highlighted in dark grey). The main content area has a title "Port Range Forward". It contains a table with columns: Name, Match, and Enable. A message below the table says "This section contains no values yet". Below the table is a form titled "Port Range Forward" with fields: Name (text input), Protocol (dropdown menu showing "TCP+UDP"), Start Port (text input), End Port (text input), and IP Address (text input). At the bottom are buttons for Reset, Save, and Apply.

## Port Range Forward

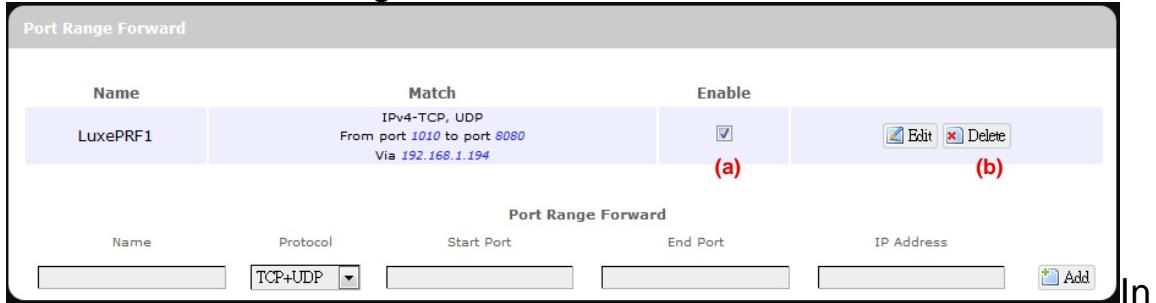
Port Range Forward allows you to set up public services on your network, such as web servers, ftp servers, e-mail servers, and other specialized Internet applications.

To forward a port range:

A screenshot of the "Port Range Forward" configuration form. The fields are: Name (LuxePRF1), Protocol (TCP+UDP), Start Port (1010), End Port (8080), and IP Address (192.168.1.194). Below the form are three buttons: Add, Reset, Save, and Apply.

- Name:** Enter an application name for this port range forwarding rule.
- Protocol:** Click  and select a protocol from the drop down list – *TCP+UDP* (default), *TCP*, *UDP*, or *Other...*
- Port Range Forward:** Specify the range of port forwarding by entering the **Start Port** number and the **End Port** number.
- IP address:** Enter the IP address of the PC running the specific application.

5. Click  **Add**. The port range forwarding rule you have just entered will be added to the Port Range Forward list.



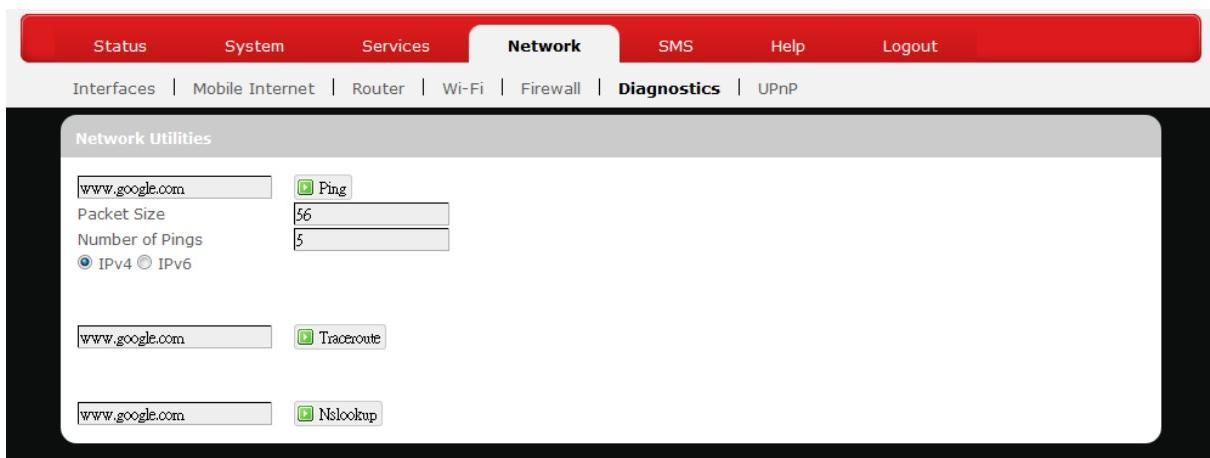
In the status area, the message **Unapplied Change** may appear next to "Operator Name" to indicate configuration changes temporarily stored in the router.

6. More rules can be added to the Port Range Forward list by repeating Steps 1-5.
7. (a) To enable or disable a Port Forwards list rule, click its check box under 'Enable'.
   
(b) To remove any Port Forwards rule, click its corresponding  **Delete** button.
8. To edit a particular Port Forwards rule in detail, click its corresponding  **Edit** button, and the rule's associated configuration page (more flexible and detailed than express settings in Steps 1-4) will appear. After making any changes, click  **Apply**. Finally click  **Back to Overview** to exit this configuration page.

This screenshot shows the detailed configuration page for the 'LuxePRF1' rule. It includes fields for 'Rule is enabled' (checkbox 'Disable'), 'Name' (LuxePRF1), 'Protocol' (TCP+UDP), 'Forward start port' (1010), 'Forward end port' (8080), and 'Internal IP address' (192.168.1.194). Below each field, there is a small explanatory note: 'Redirect matched incoming traffic to the given port on the internal host' for the port fields and 'Redirect matched incoming traffic to the specified internal host' for the internal IP address field.

**Note:** Numerical and text values shown in the illustrative examples are for demonstration purposes only and are not for actual operation.

## Diagnostics



This menu contains tools for effective network analysis and troubleshooting.

### Network Utilities

#### Ping

www.google.com  Packet Size 56 Number of Pings 5  IPv4  IPv6

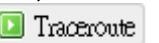
This feature allows you to check the status of a connection.

1. In the text box next to , enter the IP address or URL that you want to ping, and then select its corresponding internet protocol by clicking either the IPv4 or IPv6 radial button.
2. In the text box of “Packet Size”, enter the desired value (default packet size is 56).
3. In the text box of “Number of Pings”, enter the number of times you wish to ping (default value is 5).
4. Click  to begin the connection status check. ‘Ping’ messages will appear below.

#### Traceroute

www.google.com

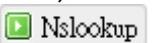
This feature allows you to check the performance of a connection.

- 
1. In the text box next to , enter the IP address or URL that you want to trace route, and then click  to start the performance test. ‘Traceroute’ messages will appear below.

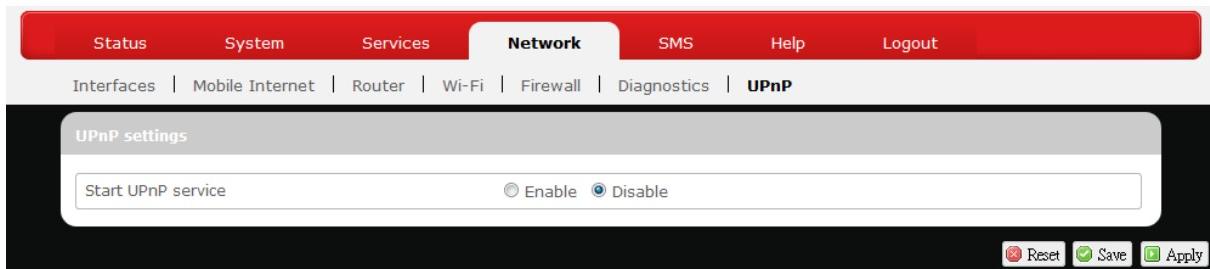
## **NS Lookup**



This feature allows you to retrieve name server information.

1. In the text box next to , enter the IP address or URL that you want to trace route, and then click  to get name server information. ‘Nslookup’ messages will appear below.

## **UPNP**

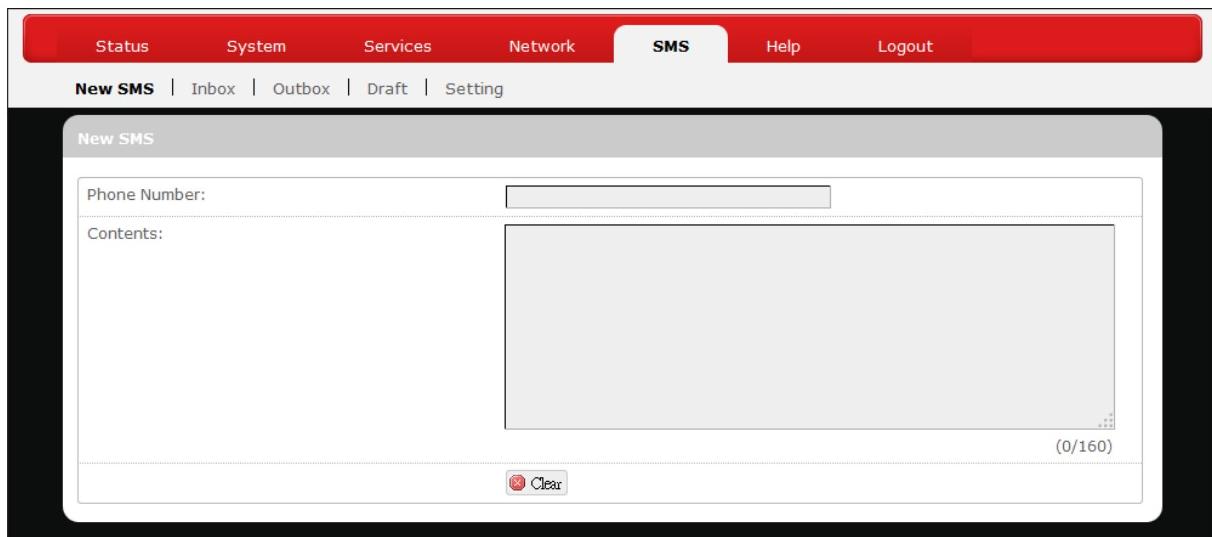


Universal Plug and Play – Allows wired and wireless network devices to discover each other and establish network services.

### **UPnP Settings**

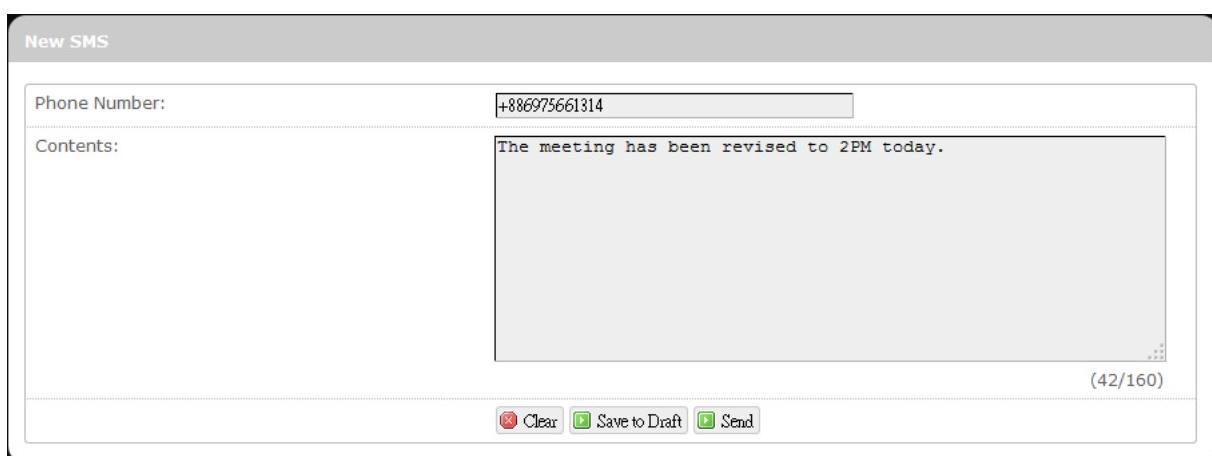
Here you can ‘Enable’ or ‘Disable’ the UPnP service.

# SMS



Short Message Service – Allows mobile phones and network devices to exchange short text messages.

## New SMS



Here you can write and send a new SMS message. Enter the recipient's phone number in the field *Phone number*. Enter message texts in the field *Contents*.

To erase written contents and start over again, click . To save written contents as a draft for later use, click . When you are ready to send the message, click . A confirmation message will appear if the SMS message is sent successfully.



## Inbox

The screenshot shows the SMS inbox interface. The top navigation bar includes links for Status, System, Services, Network, **SMS**, Help, and Logout. Below the navigation is a sub-navigation bar with New SMS, **Inbox**, Outbox, Draft, and Setting. The main area is titled "Inbox" and displays a table of received messages. The columns are Select, Number, Date, and Content. Two messages are listed:

Select	Number	Date	Content
<input type="checkbox"/>	886970492335	13-11-28 14:40:41	FFFFFFFFFFFFFF
<input type="checkbox"/>	886970492335	13-11-28 14:40:58	CCCCCCCCCCCCCCCCCCCC

At the bottom of the inbox area are two buttons: a green "Delete" button and a blue "Import" button.

Here you can receive and read incoming SMS messages. To get messages from the server, click **Import**. To remove unwanted messages, select messages to delete and click **Delete**.

## Outbox

The screenshot shows the SMS outbox interface. The top navigation bar includes links for Status, System, Services, Network, **SMS**, Help, and Logout. Below the navigation is a sub-navigation bar with New SMS, Inbox, **Outbox**, Draft, and Setting. The main area is titled "Outbox" and displays a table of sent messages. The columns are Select, Number, Date, and Content. Two messages are listed:

Select	Number	Date	Content
<input type="checkbox"/>	+886975661314	2014 01/02 03:54:28	The meeting has been revised to 2PM today.
<input type="checkbox"/>	+886975661314	2014 01/02 04:03:18	Kindly confirm your availability the week of ....

At the bottom of the outbox area is a green "Delete" button.

Here you can see SMS messages that have been sent out.

To forward a particular SMS message, check only the message of interest without checking others.

Outbox				
Select	Number	Date	Content	
<input checked="" type="checkbox"/>	+886975661314	2014 01/02 03:54:28	The meeting has been revised to 2PM today.	
<input type="checkbox"/>	+886975661314	2014 01/02 04:03:18	Kindly confirm your availability the week of ....	
<input type="button" value="Delete"/> <input type="button" value="Edit"/>				

Click .

Forward SMS

Phone Number:	+886975017194
Contents:	The meeting has been revised to 2PM today.  <small>(42/160)</small>
<input type="button" value="Cancel"/> <input type="button" value="Save to Draft"/> <input type="button" value="Send"/>	

An additional configuration item *Forward SMS* will appear on top of the configuration item *Outbox*. If necessary, modify the recipient's phone number in the field *Phone number* or modify message texts in the field *Contents*. To cancel message forwarding, click  . To save written contents as a draft for later use, click  . When you are ready to forward the message, click  .

To remove SMS messages from Outbox, check the messages to remove.

Outbox				
Select	Number	Date	Content	
<input checked="" type="checkbox"/>	+886975661314	2014 01/02 03:54:28	The meeting has been revised to 2PM today.	
<input checked="" type="checkbox"/>	+886975661314	2014 01/02 04:03:18	Kindly confirm your availability the week of ....	
<input type="button" value="Delete"/>				

Click .

## Draft

The screenshot shows the 'Draft' section of the BandLuxe SMS interface. At the top, there is a navigation bar with links: Status, System, Services, Network, SMS (highlighted in red), Help, and Logout. Below the navigation bar, a secondary menu bar includes: New SMS, Inbox, Outbox, Draft (highlighted in blue), and Setting. The main content area is titled 'Draft' and displays three saved SMS messages in a table format:

Select	Number	Date	Content
<input type="checkbox"/>	+19492345678	2014 01/02 03:58:30	Happy New Year!
<input type="checkbox"/>	+8613148885555	2014 01/02 04:00:04	I am in a meeting right now, will reply to yo....
<input type="checkbox"/>	+886932166167	2014 01/02 04:06:33	The meeting has been revised to 2PM today.

At the bottom of the table, there is a single button labeled 'Delete'.

Here you can review and send out SMS messages drafts that have been previously saved.

To send a particular SMS draft message, check only the message of interest without checking others.

This screenshot is similar to the previous one, but the first message in the list has a checked checkbox in the 'Select' column. The other two messages remain unselected. The rest of the interface, including the table and buttons, is identical to the first screenshot.

Click .

The screenshot shows the 'Edit SMS' dialog box. It contains two input fields: 'Phone Number:' with the value '+19492345678' and 'Contents:' with the value 'Happy New Year!'. Below the 'Contents:' field is a note '(15/160)'. At the bottom of the dialog are three buttons: 'Cancel', 'Save to Draft', and 'Send'.

An additional configuration item *Edit SMS* will appear on top of the configuration item *Draft*. If necessary, modify the recipient's phone number in the field *Phone number* or modify message texts in the field *Contents*. To cancel sending out the SMS draft message, click . To save written

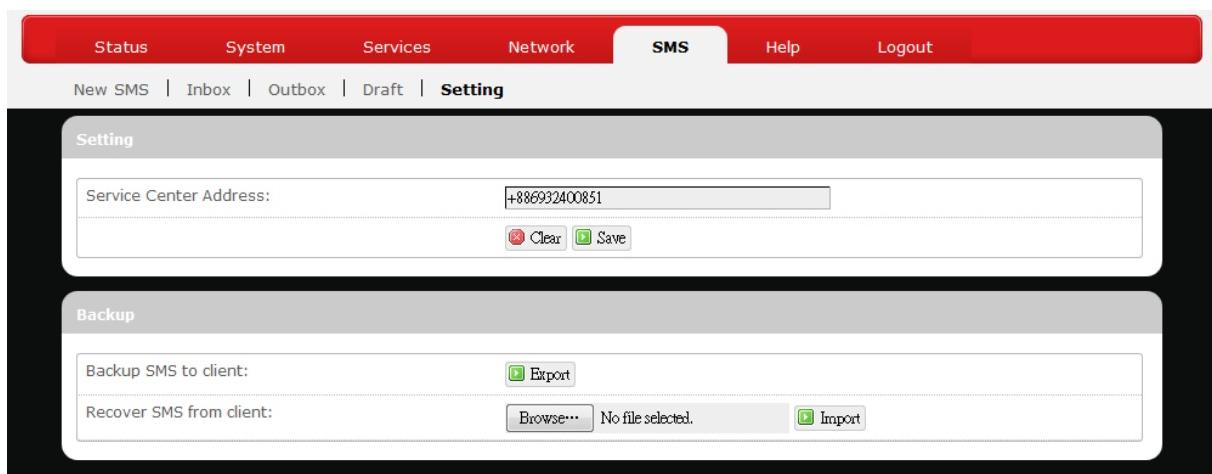
contents as a draft for later use, click . When you are ready to send the SMS draft message, click .

To remove SMS draft messages from the draft list, check messages to remove.

Draft			
Select	Number	Date	Content
<input checked="" type="checkbox"/>	+19492345678	2014 01/02 03:58:30	Happy New Year!
<input checked="" type="checkbox"/>	+8613148885555	2014 01/02 04:00:04	I am in a meeting right now, will reply to yo....
<input checked="" type="checkbox"/>	+886932166167	2014 01/02 04:06:33	The meeting has been revised to 2PM today.

Click .

## Setting



The screenshot shows the SMS application's main menu at the top with tabs for Status, System, Services, Network, SMS (selected), Help, and Logout. Below the menu, there are links for New SMS, Inbox, Outbox, Draft, and Setting. The main area contains two sections: "Setting" and "Backup". The "Setting" section has a field for "Service Center Address" containing "+886932400851", with "Clear" and "Save" buttons below it. The "Backup" section has fields for "Backup SMS to client" (with an "Export" button) and "Recover SMS from client" (with "Browse...", "Import", and "No file selected." buttons).

Here you can configure settings for service center and SMS backup.

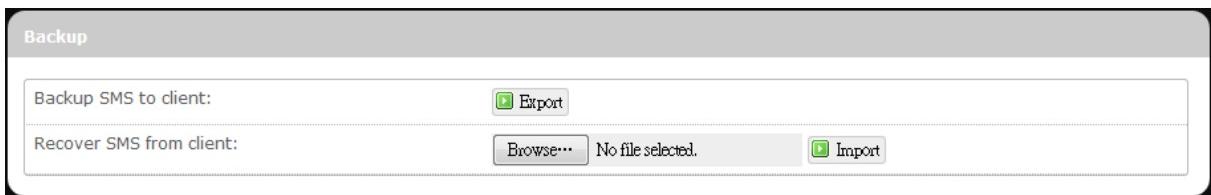
## Setting



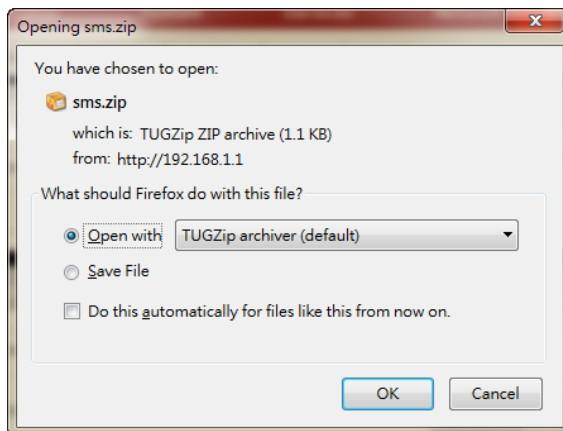
This is a zoomed-in view of the "Setting" configuration dialog. It features a "Service Center Address" input field with the value "+886932400851", a "Clear" button, and a "Save" button.

Enter the service center phone number in the field *Service Center Address* and click . To clear current phone number and enter a new one, click .

## **Backup**



To backup SMS messages to your local computer, click **Export** in the field *Backup SMS to client*.



Choose **Save File**, click **OK**, and follow directions on the screen to save SMS messages on your local computer as a packed ZIP file.

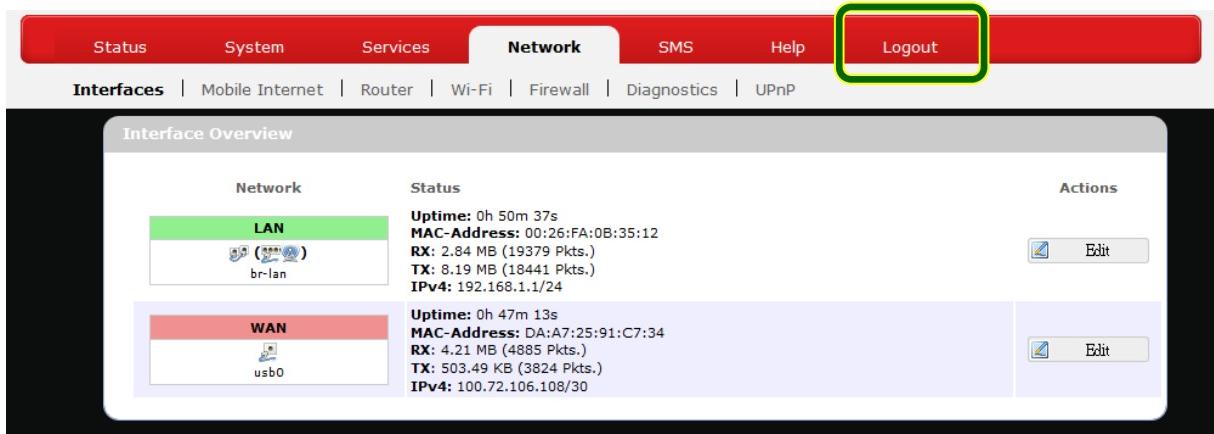
To recover SMS messages from your local computer, click **Browse** in the field *Recover SMS from client* and select the ZIP file that you have saved previously, and then click .

# Help



Click the appropriate download link to download the latest Quick Start Guide or User Manual of this product.

# Logout



Exits the web configuration interface and re-directs to login prompt.

**Note:** After a period of inactivity, automatic logout will occur. After clicking any menu item, the login prompt will appear as re-login is needed to continue using the web configuration interface.

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# Appendix A: FAQ

Q: What should I know and how long does it take when I upgrade the firmware of router or modem?

- A:
1. While upgrading the firmware requires some time to finish. During that, you **MUST NOT** turn off the power or interrupt the progress.
  2. You may use an Ethernet cable or a wireless connection to upgrade the firmware. We **suggest the use of an Ethernet cable**.
  3. It may take **2 minutes to upgrade the firmware of the router and 5 minutes to upgrade the firmware of the modem**.
  4. When the firmware of the modem is upgrading, the UMTS LED will flash among **Blue-Green-Red**. You should wait until the LED is in single color (about 4-5 minutes).

Q: How do I connect to the router?

- A:
1. Connect an Ethernet cable between PC/Notebook (NB) and the router.
  2. Use WiFi to connect.

Q: What's the default "User name" and "Password" for the router?

- A:
- User name: admin  
Password: admin

Q: How do I enter GUI and setup the configuration for the router?

- A:
1. Connect PC/NB to the router.
  2. Open Internet Explorer or other Web browser.
  3. Input "http://192.168.1.1".
  4. Input User name and Password.

Q: Why can't I connect to the network via built-in 3G module?

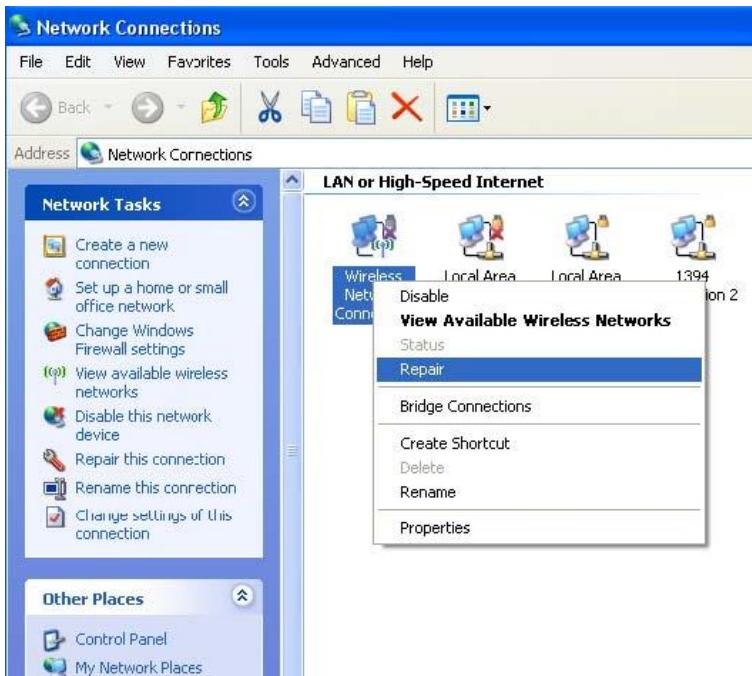
- A:
1. Check the SIM/USIM to see if it is inserted well.
  2. Check the UMTS LED on the router to see if it is solid.
  3. Check the Status on GUI to see if the SIM/USIM detected well.
  4. Check the Status on GUI to see if the APN it is correct.
  5. Check the Internet on GUI to see if the Connection is "Keep Alive" or not.

Q: Why can't I link on the GUI?

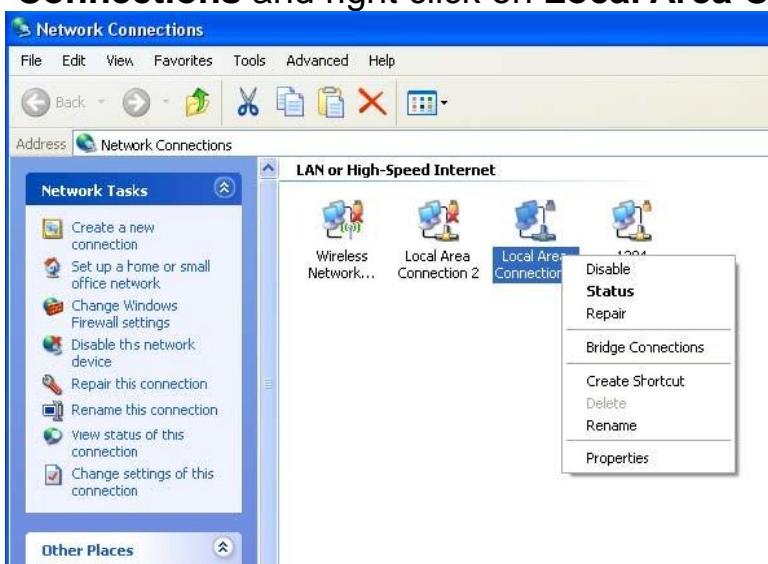
- A: If you have changed your WiFi security, SSID, Local IP address, you have to repair your network to get a new IP that you can link the GUI.

**XP:**

If you are a WiFi user, click **Network Connections** and right click on **Wireless Network Connection**, click **Repair**.

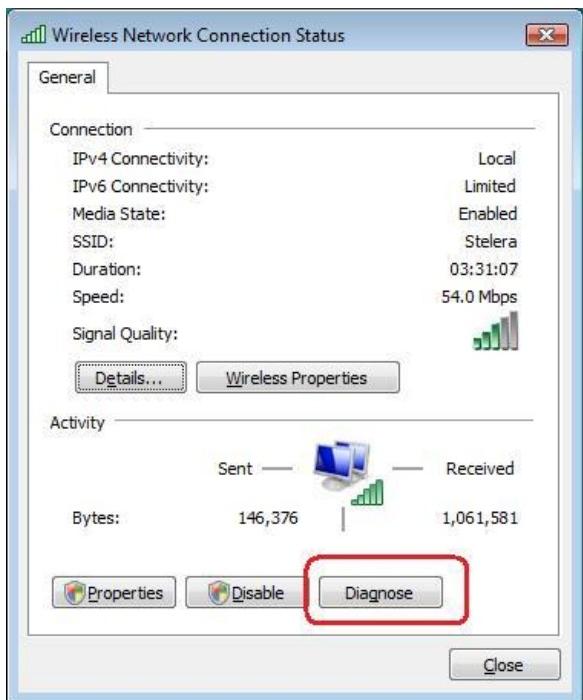


If you use Local Area Connection to connect the Router, click **Network Connections** and right click on **Local Area Connection**, click **Repair**.



### Vista/7:

1. If you are a WiFi user, please click **Network and Sharing Center > Manage network connections > Wireless Network Connection > Diagnose.**



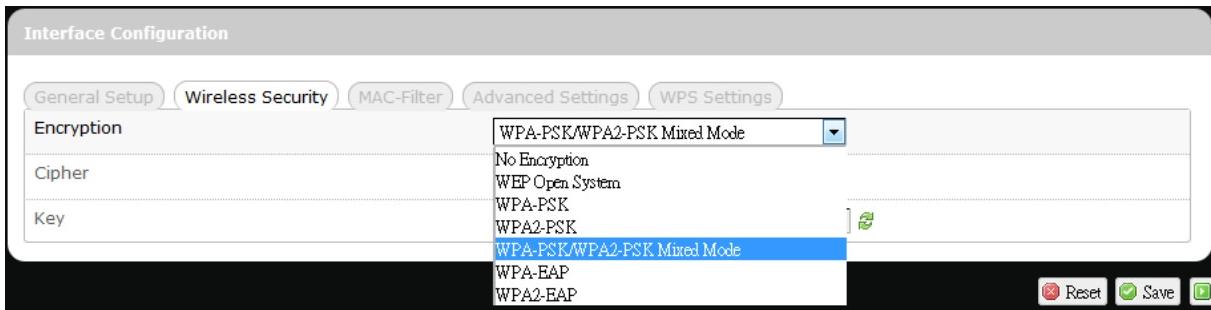
**2. Please click **Reset the network adapter "Wireless Network Connection"** and it will begin to repair.**



**3. If you use Local Area Connection to connect the Router, please click **Network and Sharing Center > Manage network connections > Local Area Connection > Diagnose**, follow step 1 and the subsequent messages to repair it.**

**Q: How do I configure my WiFi settings from GUI?**

- A:** Click the menu tabs **Network → Wi-Fi** to access to the Wi-Fi submenu, and then click the submenu tab of a particular ESSID. If you want to configure WiFi Security please click the "Wireless Security" tab under "Interface Configuration". There are seven wireless security encryption options supported by the Router: **WEP Open System, WEP Shared Key, WPA-PSK, WPA2-PSK, WPA-PSK/WPA2-PSK Mixed Mode, WPA-EAP, and WPA2-EAP**.



Q: How can I have a long-time link?

A: Click the menu tabs **Network → Router → Router Setting**. Under “DHCP Service”, set Client Lease Time to a large value (e.g. 120h = 120 hours = 5 days).

Q: Why can't I use the router in the office?

A: Your router's IP address might conflict with the office default settings.

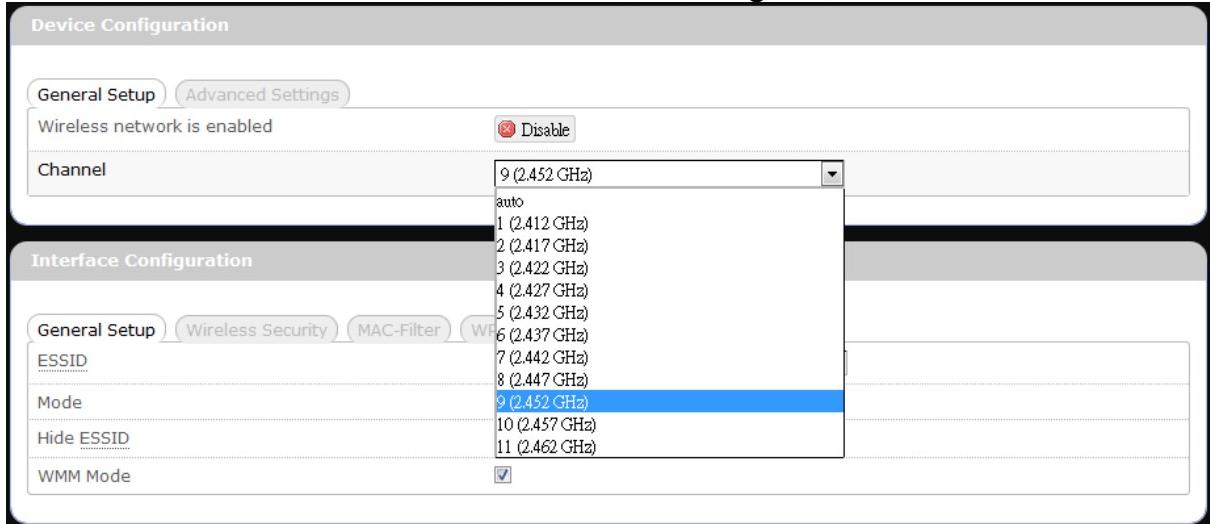
Q: Why is my internet speed so slow with the router?

A: 1. Click the menu tabs **Status → Mobile Internet** to check the Rx Signal Strength in dBm. Weak signals will significantly slow down internet speed.



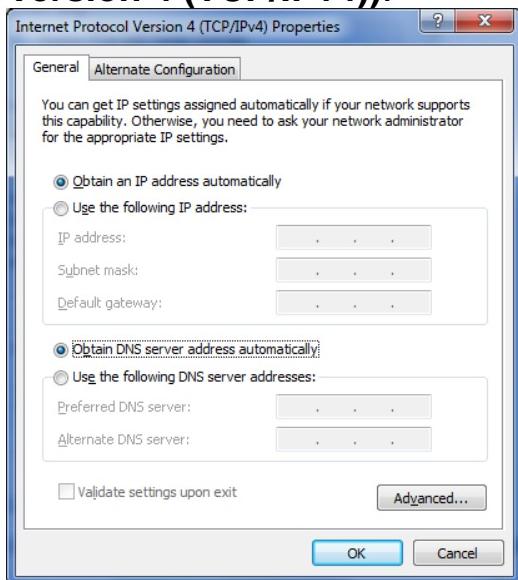
<u>LEDs ON</u>	Signal Strength	3G/2G/cdma2000 RSSI reading	4G LTE RSRP reading
none	0 bars	Weaker than -100 dBm	Weaker than -115 dBm
#12	1 bar	-100 dBm to (just below) -95 dBm	-115 dBm to (just below) -109 dBm
#12to#13	2 bars	-95 dBm to (just below) -90 dBm	-109 dBm to (just below) -103 dBm
#12to#14	3 bars	-90 dBm to (just below) -83 dBm	-103 dBm to (just below) -95 dBm
#12to#15	4 bars	-83 dBm to (just below) -76 dBm	-95 dBm to (just below) -87 dBm
#12to#16	5 bars	-76 dBm or stronger	-87 dBm or stronger

2. Click the menu tabs **Network** → **Wi-Fi** to access the **Wi-Fi** submenu, and then click the submenu tab of the currently used ESSID. Then select a different WiFi Channel under “Device Configuration.”



**Q:** I have connected the computer with the router via LAN connection. Why can't I access the router's IP address "http://192.168.1.1" ?

**A:** Your computer's IP address and DNS server addresses may have been assigned manually. Please set your computer's IP address and DNS server addresses to be obtained automatically. The Windows setup path is: **Control Panel** → **All Control Panel Items** → **Network and Sharing Center** → **Local Area Connection** → **Properties** → **Internet Protocol Version 4 (TCP/IPv4)**.



**Q:** Why can't I use VPN via Router?

**A:** You may check your office IP settings, the IP settings must not conflict with

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each other.

Q: How do I configure the settings when I use xDSL to link the router?

A: 1. PPPoE: Go to the **GUI Internet > Basic Setting > Ethernet Setting**.

Change Connection Type to PPPoE. Enter the Username and Password provided by your ISP. Remember to connect your xDSL or Modem to the WAN Port on your Router.

2. Static IP: Go to the **GUI Internet > Basic Setting > Ethernet Setting**.

Change Connection Type to Static IP. Enter the information in the blank provided by your ISP. Remember to connect your xDSL or Modem to the WAN Port on your Router.

Q: Can I prevent others from using my router?

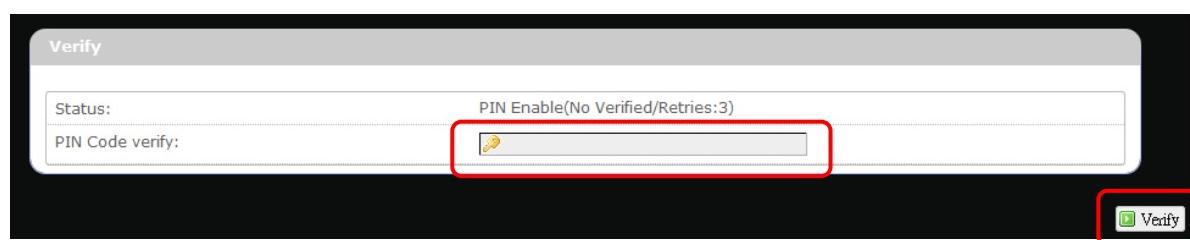
A: Yes, there are some ways to prevent others from using your router.

1. Enable your WiFi client filter.
2. Disabled your SSID Broadcast.
3. Setting your WiFi security.

Q: My PIN code is enabled and where can I input the PIN code to use my Router?

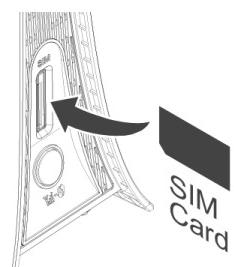
A: Click the menu tabs **Network → Mobile Internet → U/SIM PIN**

**Management**; enter your PIN Code and click  .

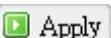


Q: Why does my U/SIM status display “PIN Disable”?

A: Check that the SIM card (which is properly activated by your mobile internet service provider) is inserted correctly in your router.

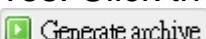


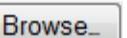
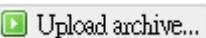
Q: Where can I change the password of the router?

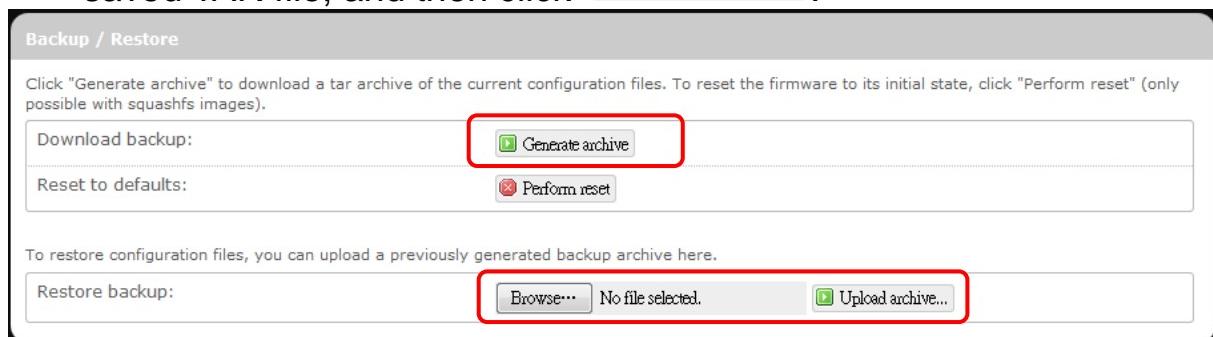
A: Click the menu tabs **System → Administration**. Enter the new password twice (set and confirm) and click 



Q: Can I backup and restore all my settings of the router?

A: Yes. Click the menu tabs **System → Backup / Flash Firmware** and click  , then follow instructions on the screen to save router settings as a TAR file at a desired location on your computer or mobile device.

Conversely, to restore previously saved router settings, click  (of "Restore backup"); follow screen instructions to choose the previously saved TAR file; and then click 



Q: How do I use the **Reset** button on the router?

A: 1. Short press the Reset button to restart the router.  
2. Long press the Reset for more than 10 sec to reset the router to factory default settings.

Q: Where can I reset the router to factory default settings?

A: 1. Long press the **Reset** button on the router for more than 10 sec.  
2. Click the menu tabs **System → Backup / Flash Firmware** and click 

Q: If I remove the SIM when 3G is connected, why can't I see the SIM status change?

A: You have to restart the router to see the status. It is best to remove the SIM card when the router is OFF.

# **Appendix B: Specifications**

**Note:** Specifications are subject to change without notice.

<b>Physical</b>	
WLAN	802.11 b/g/n (2x2 MIMO)
Cellular modem	Embedded, LTE FDD&TDD/DC-HSPA+/HSPA+/HSPA/WCDMA/EDGE/GPRS/GSM
Dimensions (LxWxH, mm)	143.6 x 73.3 x 143
Weight (g)	TBD
<b>Interface</b>	
Power On/Off Switch	Yes
RJ45 Ports	Four LAN ports, each with LED indicator.
Power supply plug	Yes
SIM slot	Yes
LED Display	Yes, for Network Status, WPS, WiFi, Signal Strength and Power.
SS/WPS/Reset button	Short press for signal strength indication Long press (>3s, <10s) for WPS activation Long press (>10s) for reset to factory default setting
<b>Connectivity and Data Speed</b>	
LTE Data Rate	Downlink: up to 100Mbps, Uplink: up to 50Mbps
LTE Bandwidth	Up to 20 MHz
DC-HSPA+ Data Rate	Downlink: up to 100 Mbps, Uplink: up to 50 Mbps
WLAN	802.11 b/g/n, 2x2 MIMO
<b>Antenna</b>	
Cellular embedded main antenna	Yes
Cellular embedded	Yes, supporting LTE bands

diversity antenna	
Cellular external main antenna port	Yes
Cellular external diversity antenna port	Yes
WiFi antenna	Embedded

### Router Features

Routing	Static Routing, Dynamic Routing (RIP)
Security	Multiple VPN pass-through (IPSec, PPTP, L2TP), Internet Access Policy (Parental control), Stateless and SPI Firewall
NAT-NAPT	Single Port Forwarding, Port Range Forwarding, Port Range Triggering, Port Filtering, DMZ, UPnP, Multicast Pass-Through
DNS	DNS Agent, DDNS
Other features	IPv4, IPv6, IPv4v6 dual stack, TCP, UDP, ICMP, ARP, DHCP Server/Client, HTTP/HTTPPs, NTP, ALGs (FTP, PPTP, RTSP)
Browser-based Administration GUI	Setup Wizard in GUI. Browser supported: IE, Firefox, Safari, Chrome

### Wireless LAN

802.11b data rate	1/2/5.5/11 Mbps
802.11g data rate	Up to 54 Mbps
802.11n data rate	Up to 300 Mbps
802.11e QoS	WMM (WiFi Multimedia), No ACK
Security Types	WPA2/WPA/AES/TKIP, WPA/WPA2 PSK mode, None/64/128 bits WEP Encryption, open system authentication.

Device Unique Default Encryption Key	Such unique key is linked to MAC address of the device.
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Auto Channel Select (ACS)	Yes, for channel 1 through 11
Other features	WPS software button, SSID broadcast disable, Guest Network (Dual SSID), Access control (MAC filter), WLAN on/off software switch.
<b>Status Indication</b>	
LED Display	1x 3-color Network Status 1x Power (also multiplexed with signal strength) 1x WiFi (also multiplexed with signal strength) 1x WPS (also multiplexed with signal strength) 1x SMS (also multiplexed with signal strength) 1x Signal Strength without multiplex
<b>Software Features</b>	
Web GUI	Web-based Setup Wizard in GUI. Browser supported: IE, Firefox, Safari
Web GUI Language Support	English
Connection Status in Web GUI	Network name, Signal strength, Roaming indication, Radio technology, Connection status, Connection time, Total downlink/uplink byte
Connection management	Connection on demand, Connection when available, Auto APN matching with USIM , APN database update through browser-based GUI, PIN management, Preferred radio NW type selection, Auto/Manual network selection.
System protection	Password protected system reset to factory default, Password protected administrator and user access authority (provisioning, configuration, authentication).
Support FW version upgrade	Yes
Device Management	TR-069
<b>Accessories</b>	
Power Adapter	Input: 100to240V, 50to60Hz AC; Output: 9V DC

## Environment

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Operation Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Operating Humidity	10% to 80% Non-Condensing
Storage Humidity	5% to 90% Non-Condensing
<b>Certification</b>	
	RoHS



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# **Appendix C: Important Safety Information and Glossary**

## **Europe – EU Declaration of Conformity**



### **European Union Notice**

Products with CE marking comply with the R&TTE Directive (99/5/EC), the EMC Directive (2004/108/EC), and the Low Voltage Directive (2006/95/EC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards).

#### **EN 60950-1 (IEC 60950-1)**

Safety of Information Technology Equipment.

#### **EN 300 328**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; data transmission equipment operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques.

#### **EN 301 489-24**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 24: Specific conditions for IMT-2000 CDMA direct spread (UTRA) for mobile and portable (UE) radio and ancillary equipment.

#### **ETSI EN 301 511**

Global system for mobile communications (GSM); Harmonised EN for mobile stations in the GSM 900 and GSM 1800 bands, covering essential requirements of article 3.2 of the R&TTE directive (1995/5/EC).

#### **ETSI EN 301 489-1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements.

#### **ETSI EN 301 489-7**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS).

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**ETSI EN 301 489-17**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Electromagnetic Compatibility (EMC) standard for radio equipment and services;  
Part 17: Specific conditions for 2.4 GHz wideband transmission systems.

**ETSI EN 301 908-1 & -2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS),  
Repeaters and User Equipment (UE) for IMT-2000 Third Generation cellular networks; Part  
1: Harmonised EN for IMT-2000, introduction and common requirements, covering essential  
requirements of article 3.2 of the R&TTE Directive.

**EN 50385**

Product standard to demonstrate the compliance of radio base stations and fixed terminal  
stations for wireless telecommunication systems with the basic restrictions or  
the reference levels related to human exposure to radio frequency electromagnetic fields  
(110 MHz - 40 GHz) - General public.

## **Federal Communication Commission Interference Statement**

15.21

You are cautioned that changes or modifications not expressly approved by the part  
responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

### **Federal Communications Commission (FCC) Statement**

This equipment has been tested and found to comply with the limits for a Class B digital  
device, pursuant to part 15 of the FCC rules. These limits are designed to provide  
reasonable protection against harmful interference in a residential installation. This  
equipment generates, uses and can radiate radio frequency energy and, if not installed and  
used in accordance with the instructions, may cause harmful interference to radio  
communications. However, there is no guarantee that interference will not occur in a  
particular installation. If this equipment does cause harmful interference to radio or television  
reception, which can be determined by turning the equipment off and on, the user is  
encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is  
connected.
- Consult the dealer or an experienced radio/TV technician for help.

**This device complies with Part 15 of the FCC Rules. Operation is subject to the  
following two conditions:**

- 1) This device may not cause harmful interference and

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- 2) This device must accept any interference received, including interference that may cause undesired operation of the device.

**FCC RF Radiation Exposure Statement:**

For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with an accessory that contains no metal and that positions the device a minimum of 20 cm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

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## Glossary

**2G:** Second-generation mobile networking technology. Represents a switchover from analog to digital; most 2G networks use GSM.

**3G:** Third-generation mobile networking technology that enables simultaneous transfer of voice and non-voice data; most 3G networks use WCDMA.

**3.5G:** A more recent standard of mobile networking technology; generally uses HSDPA.

**3.75G:** A more recent standard of mobile networking technology; generally uses HSUPA.

**4G:** A more recent standard of mobile networking technology; generally uses LTE.

**APN (Access Point Name/Network):** Provides GPRS routing information. Consists of:

    Network ID: Identifies the external service requested by a GPRS user.

    Mobile network operator ID: Specifies routing information.

**ARFCN (Absolute Radio Frequency Channel Number):** The specific ID numbers for all radio channels used in cellular mobile communications.

**bps (bits per second):** How data flow is measured.

**CHAP (Challenge Handshake Authentication Protocol):** CHAP identifiers are changed frequently and authentication can be requested by the server at any time.

**DNS (Domain Name System):** Helps route network traffic by making the addressing process more user-friendly.

**DHCP (Dynamic Host Configuration Protocol):** How devices obtain IP addresses from a server.

**DUN (Dial-Up Network):** Windows component that enables online access via a modem.

**EDGE (Enhanced Data GSM Environment/Enhanced Data for Global Evolution):**

Advanced GPRS that delivers multimedia and other data needing greater bandwidth at up to 237 kbps.

**GPRS (General Packet Radio Service):** Delivers data in packets at up to 86 kbps.

**GSM (Global System for Mobile Communications):** The most popular cellular network, mostly operates in 850-900 or 1800-1900 MHz; the primary 2G system.

**HSDPA (High Speed Downlink Packet Access):** Advanced WCDMA that delivers downlink bandwidth intensive data at up to 7.2Mbps; typically associated with 3.5G.

**HSUPA (High Speed Uplink Packet Access):** Advanced WCDMA that delivers uplink bandwidth intensive data at up to 5.76Mbps; typically associated with 3.75G.

**HSPA+ (High Speed Packet Access +):** This is also known as HSPA Evolved, is the next step and is more focused on delivering data services enabling speeds of up to 42Mbps in the downlink and 11Mbps in the uplink.

**IMEI (International Mobile Equipment Identity):** A number unique to each GSM/UMTS device that can be used block network access by a stolen mobile device.

**IP (Internet Protocol):** Routes packets over a network.

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**Kbps (Kilobits per second):** A data flow measure; 1024 bits/second.

**LAN (Local Area Network):** A data network with limited range but good bandwidth.

**Mbps (Megabits per second):** A data flow measure; 1,048,576 bits/second.

**LTE (Long Term Evolution):** High-speed mobile communication standard based on the GSM/EDGE and UMTS/HSPA network technologies. LTE provides downlink peak rates up to 300 Mbit/s and uplink peak rates up to 75 Mbit/s.

**PAP (Password Authentication Protocol):** The difference between PAP authentication and a manual or scripted login, is that PAP is not interactive. The username and password are entered in the client's dialing software and sent as one data package as soon as the modems have established a connection, rather than the server sending a login prompt and waiting for a response.

**PPP (Point-to-Point Protocol):** An internet connection method.

**PIN (Personal Identity Number):** Four to eight digital numbers SIM card security code; allows access to the carrier's network.

**Rx:** Shorthand for Reception.

**SIM (Subscriber Identity Module):** A small card that contains key mobile device identification, subscription and contact information.

**Tx:** Shorthand for Transmission.

**WCDMA (Wideband Code Division Multiple Access):** Advanced EDGE that supports 384kbps data flow. Most 3G networks use this standard, the same as UMTS.